DOCKET

No. 08-964	
Title:	Bernard L. Bilski and Rand A. Warsaw, Petitioners v. David J. Kappos, Under Secretary of Commerce for Intellectual Property and Director, Patent and Trademark Office
Docketed:	January 30, 2009
Lower Ct:	United States Court of Appeals for the Federal Circuit
Case Nos.:	(2007-1130)
Decision Date:	October 30, 2008

Questions Presented

Date	Proceedings and Orders
Aug 3 2008	Brief amicus curiae of Conejo Valley Bar Association in support of Neither Party filed.
Jan 28 2009	Petition for a writ of certiorari filed. (Response due March 2, 2009)
Feb 4 2009	Consent to the filing of amicus briefs, in support of either party or neither party, received from counsel for the petitioners.
Feb 25 2009	Order extending time to file response to petition to and including April 1, 2009.
Feb 25 2009	Brief amicus curiae of John P. Sutton filed.
Feb 27 2009	Brief amicus curiae of Medistem, Inc. filed.
Mar 2 2009	Brief amicus curiae of American Intellectual Property Law Association filed.
Mar 2 2009	Brief amicus curiae of Anne E. Barschall filed.
Mar 2 2009	Brief amici curiae of Accenture and Pitney Bowes Inc. filed.
Mar 2 2009	Brief amicus curiae of Franklin Pierce Law Center filed.
Mar 2 2009	Brief amicus curiae of Boston Patent Law Association filed.
Mar 2 2009	Brief amicus curiae of Koninklijke Philips Electronics N.V. filed.
Mar 2 2009	Brief amicus curiae of Borland Software Corporation filed.
Mar 27 2009	Order further extending time to file response to petition to and including May 1, 2009.
May 1 2009	Brief of respondent John J. Doll, Acting Under Secretary of Commerce for Intellectual Property and Acting Director, Patent and Trademark Office in opposition filed.
May 8 2009	Reply of petitioners Bernard L. Bilski and Rand A. Warsaw filed.
May 12 2009	DISTRIBUTED for Conference of May 28, 2009.
Jun 1 2009	Petition GRANTED.
Jun 9 2009	Consent to the filing of amicus briefs, in support of either party or of neither party, received from counsel for the petitioners
Jun 25 2009	The time within which to file the joint appendix and petitioners' brief on the merits is extended to and including July 30, 2009.
Jun 25 2009	The time within which to file respondent's brief on the merits is extended to and including September 25, 2009.
Jul 21 2009	Consent to the filing of amicus briefs, in support of either party or of neither party, received from counsel for the respondent.
Jul 22 2009	Brief amicus curiae of Timothy F. McDonough, Ph.D. filed.
Jul 24 2009	Brief amicus curiae of Telecommunications Systems, Inc. in support of neither party filed.
Jul 24 2009	Brief amici curiae of Gary W. Odom and Jordan M. Kuhn in support of neither party

	filed.
Jul 30 2009	Joint appendix filed. (Statement of costs received)
Jul 30 2009	Brief of petitioners Bernard L. Bilski and Rand A. Warsaw filed.
Aug 3 2009	Brief amicus curiae of Conejo Valley Bar Association in support of neither party filed.
Aug 4 2009	Brief amicus curiae of On Time Systems, Inc., in support of neither party filed.
Aug 5 2009	Brief amici curiae of Monogram Biosciences, Inc., et al in support of neither party filed.
Aug 5 2009	Brief amicus curiae of Intellectual Property Owners Association in support of neither party filed.
Aug 5 2009	Brief amicus curiae of Intellectual Property Law Association of Chicago in support of neither party filed.
Aug 5 2009	Brief amicus curiae of Caris Diagnostics, Inc. filed.
Aug 5 2009	Brief amici curiae of Association Internationale Pour la Protection de la Propriete Intellectuelle, et al. filed.
Aug 5 2009	Brief amici curiae of Accenture and Pitney Bowes Inc. filed.
Aug 5 2009	Brief amicus curiae of Boston Patent Law Association filed.
Aug 5 2009	Brief amicus curiae of Georgia Biomedical Partnership, Inc. filed.
Aug 5 2009	Brief amicus curiae of Washington State Patent Law Association filed.
Aug 5 2009	Brief amicus curiae of Raymond C. Meiers in support of neither party filed.
Aug 6 2009	Brief amici curiae of Entrepreneurial Software Companies in support of neither party filed.
Aug 6 2009	Brief amicus curiae of Yahoo! Inc. in support of neither party filed.
Aug 6 2009	Brief amicus curiae of Austin Intellectual Property Law Association in support of neither party filed.
Aug 6 2009	Brief amici curiae of Biotechnology Industry Organization, et al. in support of neither party filed.
Aug 6 2009	Brief amicus curiae of American Intellectual Property Law Association in support of neither party filed.
Aug 6 2009	Brief amicus curiae of International Business Machines Corporation in support of neither party filed.
Aug 6 2009	Brief amicus curiae of Pharmaceutical Research and Manufacturers of America in support of neither party filed.
Aug 6 2009	Brief amicus curiae of Prometheus Laboratories Inc. in support of neither party filed.
Aug 6 2009	Brief amicus curiae of Business Software Alliance in support of affirmance filed.
Aug 6 2009	Brief amici curiae of 20 Law and Business Professors in support of neither party filed.
Aug 6 2009	Brief amicus curiae of Federal Circuit Bar Association in support of neither party filed.
Aug 6 2009	Brief amicus curiae of San Diego Intellectual Property Law Association in support of neither party filed.
Aug 6 2009	Brief amicus curiae of Teles AG in support of neither party filed.
Aug 6 2009	Brief amicus curiae of Medtronic, Inc. in support of neither party filed.
Aug 6 2009	Brief amici curiae of Robert R. Sachs and Daniel R. Brownstone in support of neither party filed.
Aug 6 2009	Brief amicus curiae of Legal OnRamp in support of neither party filed.
Aug 6 2009	Brief amici curiae of Regulatory Datacorp., et al. in support of neither party filed.
Aug 6 2009	Brief amicus curiae of University of South Florida filed.

Aug 6 2009	Brief amicus curiae of AwakenIP, LLC filed.
Aug 6 2009	Brief amici curiae of Double Rock Corporation, et al. filed.
Aug 6 2009	Brief amicus curiae of Eagle Forum Education and Legal Defense filed.
Aug 6 2009	Brief amicus curiae of Federation Internationale Des Conseils En Propriete Industrielle in support of neither party filed.
Aug 6 2009	Brief amicus curiae of Borland Software Corporation filed.
Aug 6 2009	Brief amicus curiae of Novartis Corporation filed.
Aug 6 2009	Brief amicus curiae of Houston Intellectual Property Law Association filed.
Aug 6 2009	Brief amicus curiae of Franklin Pierce Law Center filed.
Aug 6 2009	Brief amicus curiae of Law Professor Kevin Emerson Collins in support of neither party filed.
Aug 6 2009	Brief amicus curiae of Dr. Ananda Chakrabarty filed.
Aug 6 2009	Brief amici curiae of Dolby Laboratories, Inc., et al. in support of neither party filed.
Aug 6 2009	Brief amicus curiae of John Sutton filed.
Aug 17 2009	SET FOR ARGUMENT ON Monday, November 9, 2009
Aug 18 2009	CIRCULATED.
Sep 1 2009	Brief amici curiae of Profesor Lee A. Hollaar, and IEEE-USA filed. (Distributed)
Sep 25 2009	Brief of respondent David J. Kappos, Secretary of Commerce for Intellectual Property and Director, Patent and Trademark Office filed. (Distributed)
Sep 25 2009	Brief amicus curiae of Intellectual Property Section of the Nevada State Bar filed. (Distributed)
Oct 1 2009	Brief amici curiae of Center for Advanced Study and Research in Intellectual Property, et al. filed. (Distributed)
Oct 1 2009	Brief amici curiae of Internet Retailers filed. (Distributed)
Oct 1 2009	Brief amicus curiae of Red Hat, Inc. filed. (Distributed)
Oct 2 2009	Brief amicus curiae of Software Freedom Law Center filed. (Distributed)
Oct 2 2009	Brief amici curiae of Eleven Law Professors filed. (Distributed)
Oct 2 2009	Brief amici curiae of Microsoft Corporation, et al. filed. (Distributed)
Oct 2 2009	Brief amicus curiae of Software & Information Industry Association filed. (Distributed)
Oct 2 2009	Brief amici curiae of Adamas Pharmaceuticals, Inc., and Tethys Bioscience, Inc. filed. (Distributed)
Oct 2 2009	Brief amicus curiae of William Mitchell College of Law Intellectual Property Institute filed. (Distributed)
Oct 2 2009	Brief amici curiae of Bank of America Corporation, et al. filed. (Distributed)
Oct 2 2009	Brief amicus curiae of American Bar Association filed. (Distributed)
Oct 2 2009	Brief amici curiae of Professors Peter S. Menell and Michael J. Meurer filed. (Distributed)
Oct 2 2009	Brief amici curiae of Entrepreneurial and Consumer Advocates filed. (Distributed)
Oct 2 2009	Brief amici curiae of American Insurance Association, et al. filed. (Distributed)
Oct 2 2009	Brief amici curiae of American Medical Association, et al. filed. (Distributed)
Oct 2 2009	Brief amici curiae of Computer and Communications Industry Association filed. (Distributed)
Oct 2 2009	Brief amici curiae of Foundation for a Free Information Infrastructure, et al. filed.

	(Distributed)
Oct 2 2009	Brief amicus curiae of Bloomberg L.P. filed. (Distributed)
Oct 2 2009	Brief amicus curiae of Knowledge Ecology International filed. (Distributed)
Oct 2 2009	Brief amicus curiae of Free Software Foundation filed. (Distributed)
Oct 2 2009	Brief amicus curiae of Mark Landesmann filed. (Distributed)
Oct 26 2009	Reply of petitioners Bernard L. Bilski and Rand A. Warsaw filed. (Distributed)
Nov 9 2009	Argued. For petitioners: J. Michael Jakes, Washington, D.C. For respondent: Malcolm L. Stewart, Deputy Solicitor General, Department of Justice, Washington, D.C.

Name	Address	Phone
Attorneys for Petitioners:		
J. Michael Jakes	Finnegan Henderson Farabow Garrett & Dunner, LLP	(202) 408-4045
Counsel of Record	901 New York Avenue, NW	
	Washington, DC 20001-4413	
	mike.jakes@finnegan.com	
Party name: Bernard L. Bilski and Rand A. Warsaw		
Attorneys for Respondent:		
Elena Kagan	Solicitor General	(202) 514-2217
Counsel of Record	United States Department of Justice	
	950 Pennsylvania Avenue, N.W.	
	Washington, DC 20530-0001	
	SupremeCtBriefs@USDOJ.gov	
Party name: David J. Kappos, Secretary of Commerce for Intellectual Property and Director, Patent and Trademark Office		
Malcolm L. Stewart	Deputy Solicitor General	(202) 514-2201
	Department of Justice	
	Washington, DC 20530	
	malcolm.l.stewart@usjoj.gov	
Party name: David J. Kappos, Under Secretary of Commerce for Intellectual Property and Director, Patent and Trademark Office		
Other:		
Meredith Martin Addy	Brinks Hofer Gilson & Lione	(312) 321-4200
	455 N. Cityfront Plaza Drive	
	NBC Tower - Suite 3600	
	Chicago, IL 60611-5599	
	maddy@usebrinks.com	

Party name: Accenture and Pitney Bowes Inc.

Scott Eric Bain
Software & Information Industry Association
1090Vermont Avenue, NW
Suite 600
Washington, DC 20005
(202) 789-4492

Party name: Software & Infomation Industry Association

Narinder S. Banait
Fenwick & West LLP
801 California Street
Mountain View, CA 94041
nbanait@fenwick.com
(650)-335-7818

Party name: Monogram Biosciences, Inc., et al in support of neither party

Anne E. Barschall
80 Benedict Avenue
Tarrytown, NY 10591
aebarschall@yahoo.com
(914)-332-1019

Party name: Anne E. Barschall

David M. Bennion
Parsons Behle & Latimer
201 South Main Street
Salt Lake City, UT 84111
(801) 532-1234

Party name: Profesor Lee A. Hollaar, and IEEE-USA

Thomas S. Biemer
Dilworth Paxson LLP
1500 Market Street
Suite 3500E
Philadelphia, PA 19102
(215) 575-7000

Party name: Teles AG in support of neither party

Karen I. Boyd
Turner Boyd LLP
2625 Middlefield Rd. #675
Palo Alto, CA 94306
(650)-533-7572

Party name: Adamas Pharmaceuticals, Inc., and Tethys Bioscience, Inc.

Peter J. Brann
Brann & Issacson
(207) 786-3566

184 Main Street, P.O. Box 3070
Lewiston, ME 04243-3070
Party name: Internet Retailers

Richard P. Bress
Latham & Watkins LLP
555 11th Street, N.W., Suite 1000
Washington, DC 20004
rick.bress@LW.com
(202) 637-2200
Party name: Prometheus Laboratories Inc. in support of neither party

Jerry Cohen
Burns & Levinson LLP
125 Summer Street
Boston, MA 02110
(617) 345-3000
Party name: Free Software Foundation

Catriona M. Collins
100 Park Avenue
Suite 1600
New York, NY 10017
(646) 321-8443
Party name: Legal OnRamp in support of neither party

Kevin Emerson Collins
Indiana University
Maurer School of Law Bloomington
211 S. Indiana Avenue
Bloomington, IN 47405
kevcolli@indiana.edu
(812)-856-1841
Party name: Law Professor Kevin Emerson Collins in support of neither party

John L. Cooper
Farella Braun + Martel LLP
235 Montgomery Street
San Francisco, CA 94105
(415) 954-4400
Party name: Dolby Laboratories, Inc., et al. in support of neither party

Michael H. Davis
50 Avenue A
Suite 3A
New York, NY 1000-7364
(917) 771-0235
Party name: Knowledge Ecology International

John F. Duffy
Fried Frank Harris Shriver & Jacobson LLP
(202) 639-7000
1001 Pennsylvania Ave., NW
Washington, DC 20004
Party name: Regulatory Datacorp., et al. in support of neither party

Gregg William Emch
MacMillan Sobanski & Todd LLC
(419)-255-5900
One Maritime Plaza, Fifth Floor
720 Water Street
Toledo, OH 43604
Party name: Raymond C. Meiers in support of neither party

Thomas G. Field Jr.
Professor of Law
(603) 513-5147
Franklin Pierce Law Center
2 White Street
Concord, NH 03301
Party name: Franklin Pierce Law Center

Edward Anthony Figg
425 K Street, NW
(202) 783-6040
Suite 800
Washington, DC 20004
Party name: Biotechnology Industry Organization, et al. in support of neither party

George L. Graff
112 Holly Place
(914) 762-3706
Briarcliff Manor, NY 10510
Party name: Intellectual Property Owners Association in support of neither party

Robert P. Greenspoon
Flachsbart & Greenspoon LLC
(312)-431-3800
53 W. Jackson Blvd. Suite 652
Chicago, IL 60604
rpg@fg-law.com
Party name: Telecommunications Systems, Inc. in support of neither party

Jack E. Haken
Philips Intellectual Property & Standards
(914) 945-6000
345 Scarborough Road
Briarcliff Manor, NY 10510

Party name: Koninklijke Philips Electronics N.V.

R. Mark Halligan
Nixon Peabody LLP
300 S. Riverside Plaza
Chicago, IL 60606
(312) 425-8657

Party name: Association Internationale Pour la Protection de la Propriete Intellectuelle, et al.

F. Scott Kieff
1111 23rd Street NW
Apt. 3d
Washington, DC 20037
(202) 558-6667

Party name: Dr.Ananda Chakrabarty

William H. Kitchens
Arnall golden Gregory LLP
171 17th Street, NW
Atlanta, GA 30363
(404) 873-8500

Party name: Georgia Biomedical Partnership, Inc.

Peter J. Knudsen
Woodcock Washburn, LLP
999 Third Avenue
Seattle, WA 98104
pknudsen@woodcock.com
(206)-332-1380

Party name: Washington State Patent Law Association

Scott S. Kokka
Kokka & Backus, PC
200 Page Mill Road
Suite 103
Palo Alto, CA 94306-2022
(650) 566-9912

Party name: Borland Software Corporation

Jennifer Claire Kuhn
5003 Timberline Dr.
Austin, TX 78746
jenkuhn@austin.rr.com
(512)-731-1847

Party name: Austin Intellectual Property Law Association in support of neither party

Jeffrey A. Lamken
Molo Lamken LLP
The Watergate
(202) 556-2010

600 New Hampshire Ave., NW
Washington, DC 20037
jlamken@mololamken.com
Party name: Novartis Corporation

Carolyn B. Lamm
President
American Bar Association
321 North Clark Street
Chicago, IL 60654-7598
(312) 988-5000
Party name: American Bar Association

William Morris Lamoreaux
900 Jackson Street, Suite 180
Dallas, TX 75202
(214) 747-2012
Party name: Timothy F. McDonough, Ph.D.

Robert C. Laurenson
4 Park Plaza, Suite 1000
Irvine, CA 92614
(949) 759-5269
Party name: San Diego Intellectual Property Law Association

Joel R. Leeman
Bromberg and Sunstein LLP
125 Summer Street
Boston, MA 02210-1618
(617) 443-9292
Party name: Boston Patent Law Association

Mark A. Lemley
William H. Neuman Professor
Stanford Law School
559 Nathan Abbott Way
Stanford, CA 94305
(650) 723-4605
Party name: 20 Law and Business Professors in support of neither party

Allonn E. Levy
Hopkins & Carley
70 South First Street
San Jose, CA 95113
(408) 286-9800
Party name: Foundation for a Free Information Infrastructure, et al.

Jeff Lloyd
Saliwanchik Lloyd & Saliwanchik
(352)-375-8100

	A Professional Association P.O. Box 142950 Gainesville, FL 32614-2950 JL@slspatents.com	
Party name: University of South Florida		
Charles R. Macedo	Amster Rothstein & Ebenstein LLP 90 Park Avenue New York, NY 10016	(212)-336-8000
Party name: Double Rock Corporation, et al.		
Glenn B. Manishin	Duane Morris LLP 505 9th Street, NW Suite 1000 Washington, DC 20004 gbmanishin@duanemorris.com	(202) 776-7800
Party name: Computer and Communications Industry Association		
Johnathan E. Mansfield	Pacwest Center 1211 S.W. 5th Avenue Suite 1900 Portland, OR 97204 jmansfield@schwabe.com	(503)-222-9981
Party name: Gary W. Odom and Jordan M. Kuhn		
Edward D. Manzo	Cook Alex Ltd. 200 West Adams Suite 2850 Chicago, IL 60606	(312) 236-8500
Party name: Intellectual Property Law Association of Chicago in support of neither party		
Robert Allison Matthews Jr.	Latimer Mayberry & Matthews IP Law, LLP 1750 Kraft Drive, Suite 1190 Blacksburg, VA 24060	(434)-525-1141
Party name: Medistem, Inc.		
Ann Marie McCrackin	Director Patent Prosecution Program	60351339

Franklin Pierce Law Center
2 White Street
Concord, NH 55402
mccrackin@slwip.com

Party name: Franklin Pierce Law Center

James F. McKeown
Crowell & Moring
1001 Pennsylvania Ave. NW
Washington, DC 20004
202624

Party name: Federal Circuit Bar Association in support of neither party

Peter S. Menell
Professor of Law
UC Berkeley School of Law
Boalt Hall
Berkeley, CA 94720
(510) 642-5489

Party name: Professors Peter S. Menell and Michael J. Meurer

Stuart Philip Meyer
Fenwick & Wick LLP
801 California Street
Mountainview, CA 94041
smeyer@fenwick.com
(650)-988-8500

Party name: On Time Systems, Inc., in support of neither party

Eben Moglen
Software Freedom Law Center
1995 Broadway, 17 th Floor
New York, NY 10023
(212) 461-1900

Party name: Software Freedom Law Center

R. Carl Moy
William Mitchell College of Law
Intellectual Property Institute
875 Summit Avenue
St. Paul, MN 55105
(651) 290-6344

Party name: William Mitchell College of Law Intellectual Property Institute

James R. Myers
Ropes & Gray LLP
One Metro Center
700 12th Street, NW
(202) 508-4600

Suite 900
Washington, DC 20005
Party name: American Insurance Association, et al.

Kelsey I. Nix
Willkie Farr & Gallagher LLP
787 Seventh Avenue
New York, NY 10019
(212) 728-8000
Party name: Bloomberg L.P.

Mark Andrew Perry
Gibson Dunn & Crutcher LLP
1050 Connecticut Avenue, NW
Washington, DC 20036-5306
(202) 887-3667
Party name: Microsoft Corporation, et al.

Andrew J. Pincus
Mayer Brown LLP
1999 K Street, NW
Washington, DC 20006-1101
apincus@mayerbrown.com
(202) 263-3000
Party name: Business Software Alliance

Harry J. Roper
Jenner & Block LLP
One IBM Plaza
Chicago, IL 60611
(312) 222-9350
Party name: Pharmaceutical Research and Manufacturers of America in support of neither party

Robert C. Ryan
Holland & Hart LLP
5441 Kietzke Lane, 2nd Fl.
Reno, NV 89511
(775) 327-3000
Party name: Intellectual Property Section of the Nevada State Bar

Robert R. Sachs
555 California Street
Suite 1200
San Francisco, CA 94104
rsachs@fenwick.com
(415)-875-2410
Party name: Robert R. Sachs and Daniel R. Brownstone in support of neither party

Joshua D. Sarnoff	Washington College of Law American University 4801 Mass. Ave., NW Washington, DC 20016	(202) 274-4165
Party name: Eleven Law Professors		
Andrew L. Schlafly	939 Old Chester Road Far Hills, NJ 07931	(908) 719-8608
Party name: Eagle Forum Education and Legal Defense		
Gideon A. Schor	1301 Avenue of the Americas 40th Floor New York, NY 10019	(212) 999-5800
Party name: Caris Diagnostics, Inc.		
Jason M. Schultz	UC Berkeley School of Law Berkeley, CA 94720-7200	(510) 642-1957
Party name: Entrepreneurial and Consumer Advocates		
Steven C. Sereboff	310 N. Westlake Blvd. Suite 120 Westlake Village, CA 91362 ssereboff@socalip.com	(805)-230-1350
Party name: Conejo Valley Bar Association		
Shaun R. Snader	Foley & Lardner 3000 K Street, NW Suite 500 Washington, DC 20007-5143	(202) 672-5300
Party name: Mark Landesmann		
Howard Lyman Speight	1 Shell Plaza 910 Louisiana Street Houston, TX 77002	(713) 881-9600
Party name: Houston Intellectual Property Law Association		
Richard H Stern	Kellogg Huber Hansen Todd Evans & Figel PLLC	(202) 326-7900

1615 M Street, NW
Suite 400
Washington, DC 20036
Party name: Center for Advanced Study and Research in Intellectual Property, et al.

Robert Greene Sterne
Sterne Kessler Goldstein & Fox PLLC
(202) 772-8555
1100 NY Ave. NW
Washington, DC 20005
Party name: Entrepreneurial Software Companies in support of neither party

Catherine E. Stetson
Hogan & Hartson L.L.P.
(202) 637-5491
555 Thirteenth Street, N.W.
Washington, DC 20004
cestetson@hhlaw.com
Party name: International Business Machines Corporation in support of neithr party

Katherine J. Strandburg
New York University School of Law
(212) 998-6269
245 Sullivan Street
New York, NY 10012
katherine.strandburg@nyu.edu
Party name: American Medical Association, et al.

Lawrence M. Sung
Dewey & LeBoeuf, LLP
(202) 346-8000
1101 New Ork Avenue NW
Washington, DC 20005
Party name: Medtronic, Inc. in support of neither party

John P Sutton
125 Race Street
(530) 477-8538
Grass Valley, CA 95945
Party name: John Sutton

John P. Sutton
2421 Pierce Street
(415) 929-7408
San Francisco, CA 94115-1131
Party name: John P. Sutton

Joel H. Thornton
The Thornton Firm
(706) 266-6836

	P.O. Box 129 Rome, GA 30162	
Party name: AwakenIP, LLC		
Robert H. Tiller	Red Hat, Inc. 1801 VarsityDrive Raleigh, NC 27606	(919) 754232
Party name: Red Hat, Inc.		
Maxim H. Waldbaum	Schiff Hardin LLP 900 Third Avenue New York, NY 10022	(212) 753-5000
Party name: Federation International Des Conseils En Propriete Industrielle in support of neither party		
Seth P. Waxman	Wilmer Cutler Pickering Hale and Dorr LLP 1875 Pennsylvania Avenue, N.W. Washington, DC 20006 seth.waxman@wilmerhale.com	(202) 663-6000
Party name: Bank of America Corporation, et al.		
William K. West Jr.	Howrey LLP 1299 Pennsylvania Avenue, NW Washington, DC 20004	(202) 783-0800
Party name: American Intellectual Property Law Association		
Christopher J. Wright	Wiltshire & Grannis LLP 1200 Eighteenth St., N.W. Washington, DC 20036 cwright@harriswiltshire.com	(202) 730-1300
Party name: Yahoo, Inc. in support of neither party		

PETITION
FOR
WRIT OF
CERTIORARI

113 ① No. 08-___

Supreme Court, U.S.
FILED
08-954 JAN 28 2009
OFFICE OF THE CLERK

IN THE
Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF
COMMERCE FOR INTELLECTUAL PROPERTY AND
ACTING DIRECTOR OF THE UNITED STATES PATENT
AND TRADEMARK OFFICE,
Respondent.

On Petition for Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

PETITION FOR A WRIT OF CERTIORARI

J. MICHAEL JAKES
Counsel of Record
ERIKA H. ARNER
FINNEGAN, HENDERSON,
FARABOW, GARRETT &
DUNNER, L.L.P.
901 New York Avenue, N.W.
Washington, D.C. 20001
(202) 408-4000

RONALD E. MYRICK
DENISE W. DEFRANCO
FINNEGAN, HENDERSON,
FARABOW, GARRETT &
DUNNER, L.L.P.
55 Cambridge Parkway
Cambridge, Massachusetts 02142
(617) 452-1600

WILSON-EPES PRINTING CO., INC. – (202) 789-0096 – WASHINGTON, D.C. 20002

QUESTIONS PRESENTED

Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

Whether the Federal Circuit's "machine-or-transformation" test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273.

PARTIES TO THE PROCEEDING

Pursuant to Rule 14.1(b), the parties here and in the proceeding in the U.S. Court of Appeals for the Federal Circuit are listed.

Petitioners here and appellants below are Bernard L. Bilski and Rand A. Warsaw. The real party in interest is EQT IP Ventures, LLC.

Respondent here and appellee below is the Under Secretary of Commerce for Intellectual Property and Director of the U.S. Patent and Trademark Office, currently John J. Doll (Acting).

RULE 29.6 CORPORATE DISCLOSURE STATEMENT

All parent corporations and publicly held companies that own 10% or more of the stock of EQT IP Ventures, LLC are: Equitable Resources, Inc.

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B. Order of U.S. Court of Appeals for the Federal Circuit Granting a Hearing En Banc (Feb. 15, 2008) 144a

C. Opinion of Board of Patent Appeals and Interferences of the United States Patent and Trademark Office (Sept. 26, 2006) 146a

TABLE OF AUTHORITIES

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IN THE

Supreme Court of the United States

No. 08-____

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Respondent.

On Petition for Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

PETITION FOR A WRIT OF CERTIORARI

OPINIONS BELOW

The opinion of the U.S. Court of Appeals for the Federal Circuit (App., *infra*, 1a-143a) is reported at *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc). The Order of the U.S. Court of Appeals for the Federal Circuit granting a hearing en banc (App., *infra*, 144a-145a) is reported at *In re Bilski*, 264 F. App'x 896 (Fed. Cir. 2008).

The opinion of the Board of Patent Appeals and Interferences of the United States Patent and Trademark Office (App., *infra*, 146a-205a) is reported at *Ex parte Bilski*, 2006 WL 5738364 (B.P.A.I. Sept. 26, 2006).

JURISDICTION

The en banc judgment of the U.S. Court of Appeals for the Federal Circuit was entered on October 30, 2008. The jurisdiction of this Court is invoked under 28 U.S.C. § 1254(1).

STATUTORY PROVISIONS INVOLVED

"Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title." 35 U.S.C. § 101.

"The term 'process' means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material." 35 U.S.C. § 100(b).

"It shall be a defense to an action for infringement under section 271 of this title with respect to any subject matter that would otherwise infringe one or more claims for a method in the patent being asserted against a person, if such person had, acting in good faith, actually reduced the subject matter to practice at least 1 year before the effective filing date of such patent, and commercially used the subject matter before the effective filing date of such patent." 35 U.S.C. § 273(b)(1).

"[T]he term 'method' means a method of doing or conducting business." 35 U.S.C. § 273(a)(3).

INTRODUCTION

This case raises the most fundamental question in patent law: what can be patented? Are patents only for manufacturing processes that are tied to a particular machine or produce some physical transformation? Or do patents also embrace modern business processes that do not depend on a particular machine or device?

A primary strength of the Patent Act is that it does not limit what can be patented by subject matter, thereby adapting to and encouraging innovation at the forefront of technology. 35 U.S.C. § 101 provides that "any" new and useful process, machine, manufacture, or composition of matter may be patented, so long as the other requirements for patentability are met. There is no exclusion for business methods or any other field of invention. The only limit this Court has imposed on the broad statutory grant is that patents may not be obtained for "laws of nature, natural phenomena, and abstract ideas." Indeed, natural laws and phenomena can never qualify for patent protection because they cannot be invented at all. And abstract ideas are not eligible because they are not "useful" and thus must be applied to a practical use before they can be patented.

Beyond that, however, this Court has not placed restrictions on the types of inventions that can be patented, consistent with the broad statutory grant of patent eligibility in § 101. The Court has twice expressly declined to hold that a process must be tied to a particular machine or produce some physical transformation to be eligible for patenting. And the Court of Appeals for the Federal Circuit seemed to agree. While refusing patents for abstract ideas and laws of nature, the court allowed patenting of inventions that produced a "useful, concrete and tangible result." By adhering to the statute, which was designed to accommodate and encourage innovation, the Federal Circuit made patent protection available to such diverse fields as internet commerce, information technology, and business methods.

Tens of thousands of process patents have now issued in reliance on the Patent Act's lack of subject matter restrictions and the decisions of both this Court and the Federal Circuit refusing to restrict patent eligibility except to exclude abstract ideas and laws of nature. The Federal Circuit has abruptly changed course, however, and held that the "machine-or-transformation" test, which this Court has never said is required for patent eligibility, is in fact not optional or merely advisory but rather "the only applicable test" for patent-eligible processes. In doing so, the Federal Circuit has essentially confined all process patents to manufacturing methods, using a test that may have been appropriate during the Industrial Age but no longer fits our modern information-based economy. Not only is the test backward-looking, but it is also inconsistent with the patent statute's recognition that business methods are eligible for patenting. And while directed to a business method, the Federal Circuit's decision threatens other industries as well, such as software and biotechnology, which are important to the nation's economy. The decision has disrupted the settled expectations of patent owners and cast doubt on tens of thousands of issued patents.

This Court has not considered what is patentable subject matter since 1981, when computers were just becoming part of daily life. It is now time to do so again to prevent the Federal Circuit's outmoded "machine-or-transformation" test, while ostensibly rooted in this Court's decisions, from stifling innovation in our most vital industries and frustrating Congress' intent as expressed in the Patent Act. The Court should grant the petition so that it can instruct the Federal Circuit to return to first principles and restore the law of patent eligibility for processes under § 101.

STATEMENT OF THE CASE

A. The Claimed Invention

Bernard L. Bilski and Rand A. Warsaw invented a method of hedging the consumption risk associated with a commodity sold at a fixed price for a given period. The method can be used, for example, with energy commodities like natural gas, electricity, or coal, and includes ways to compensate for the risk of abnormal weather conditions. It enables both energy suppliers and consumers to minimize the risk of fluctuations in demand during a given period. Thus, for example, a school district with a fixed tax base and budget for heating or cooling requirements can be protected from yearly fluctuations in weather, while the suppliers are protected from the opposite effect of such fluctuations.

More specifically, the Bilski patent application, entitled "Energy Risk Management Method," describes a method in which energy consumers, such as businesses and homeowners, are offered a fixed energy bill, for example, for the winter so they can avoid the risk of high heating bills due to abnormally cold weather. An intermediary or "commodity provider" sells natural gas, in this example, to a consumer at a fixed price based upon its risk position for a given period of time, thus isolating the consumer from an unusual spike in demand caused by a cold winter. Regardless of how much gas the consumer uses consistent with the method, the heating bill will remain fixed.

Having assumed the risk of a very cold winter, the same commodity provider hedges against that risk by buying the energy commodity at a second fixed price from energy suppliers called "market participants." These market participants or suppliers have a risk position counter to the consumers, that is, they want to avoid the risk of a high drop in demand due to an unusually warm winter. A market participant could be, for example, someone who holds a large inventory of gas and wants to guarantee the sale of a portion of it by entering into a contract now. The risk assumed in the transactions with the market participants at the second fixed rate balances the risk of the consumer transactions at the first rate.

According to the patent application, setting the fixed price is not a simple process. The application discloses a complicated mathematical formula for calculating the price:

$$\text{Fixed Bill Price} = Fi + [(Ci + Ti + LDi) \times (\alpha + \beta E\,(Wi))]$$

In this equation, $\alpha + \beta E\,(Wi)$ represents an approximation of the amount of consumption driven by the weather, which is estimated with a least squares statistical model. The commodity provider must take additional statistical modeling steps (Monte Carlo simulations, one-tail tests) to properly price a deal and estimate an acceptable margin over the entire portfolio of transactions.

The method of the invention does not necessarily have to be performed on a particular machine or computer, although the practice of the invention will most likely involve both computers and modern telecommunications. The method steps are no less real, however, as they require communicating and negotiating with consumers and suppliers in a particular way to balance the risk positions. The invention is claimed in a series of steps as follows:

> 1. A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:
>
> (a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer;
>
> (b) identifying market participants for said commodity having a counter-risk position to said consumers; and
>
> (c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions.

Claim 4 of the patent application is similar to claim 1 except that it specifies precisely how the fixed price for an energy consumer transaction is determined using the mathematical formula:

> 4. A method for managing weather-related energy price risk costs sold by an energy provider at a fixed price comprising the steps of:

(a) initiating a series of transactions between said energy provider and energy consumers wherein said energy consumers purchase energy at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumers, wherein the fixed price for the consumer transaction is determined by the relationship:

$$\text{Fixed Bill Price} = Fi + [(Ci + Ti + LDi) \times (\alpha + \beta E\,(Wi))]$$

wherein,

Fi = fixed costs in period i;

Ci = variable costs in period i;

Ti = variable long distance transportation costs in period i;

LDi = variable local delivery costs in period i;

E(Wi) = estimated location-specific weather indicator in period i; and

α and ß are constants;

(b) identifying other energy market participants having a counter-risk position to said consumers; and

(c) initiating a series of transactions between said energy provider and said other energy market participants at a second fixed rate such that said series of transactions balances the risk position of said series of consumer transactions.

B. Proceedings in the Patent and Trademark Office

The examiner in the Patent and Trademark Office (PTO) rejected the Bilski application under 35 U.S.C.

§ 101, which sets forth the types of inventions that can be patented. The examiner stated that "the invention is not implemented on a specific apparatus and merely manipulates [an] abstract idea and solves a purely mathematical problem without any limitation to a practical application, therefore, the invention is not directed to the technological arts." App., *infra*, 148a.

The Bilski applicants appealed the rejection to the PTO Board of Patent Appeals and Interferences under 35 U.S.C. § 134(a). The PTO Board had jurisdiction pursuant to 35 U.S.C. § 6(b). An expanded panel of the PTO Board affirmed the rejection in a 70-page opinion. Observing that there were "unresolved issues under § 101" for "non-machine-implemented" methods, such as claimed in the Bilski application, the Board stated that "[t]he question of whether this type of . . . subject matter is patentable is a common and important one" to the PTO, "as the bounds of patentable subject matter are increasingly being tested." App., *infra*, 151a, 154a. The Board added that, after the Federal Circuit's decisions in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), and *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999), the PTO "has been flooded with claims to 'processes,' many of which bear scant resemblance to classical processes of manipulating or transforming compositions of matter or forms of energy from one state to another." App., *infra*, 151a.

Admitting that it was "struggling to identify some way to objectively analyze the statutory subject matter issue," *id.* at 154a, the PTO Board analyzed the claims under various tests. The Board considered this Court's exclusion of "abstract ideas" in *Diamond* *v. Diehr*, 450 U.S. 175 (1981), the Federal Circuit's "useful, concrete, and tangible result" test from *State Street Bank*, the "transformation of physical subject matter" test discussed by the Board in *Ex parte Lundgren*, 76 U.S.P.Q.2d 1385, 2004 WL 3561262 (B.P.A.I. 2005), and the PTO's Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility, 1300 Off. Gaz. Pat. & Trademark Office 142 (Nov. 22, 2005). App., *infra*, 180a-190a. Applying these various tests, the PTO Board concluded that the Bilski claims did not recite statutory subject matter. The Board reversed the examiner's reasoning, however, affirming its earlier holding in *Lundgren* that the "technological arts" is not a separate and distinct test for statutory subject matter. *Id.* at 180a. The Board also refuted the examiner's requirement of a specific apparatus because a claim may still be patent eligible "if there is a transformation of physical subject matter from one state to another." *Id.* at 181a. Elaborating further, the Board stated: "'mixing' two elements or compounds to produce a chemical substance or mixture is clearly a statutory transformation although no apparatus is claimed to perform the step and although the step could be performed manually." *Id.*

According to the PTO Board, however, the Bilski claims do not involve any patent-eligible transformation because they only transform "non-physical financial risks and legal liabilities of the commodity provider, the consumer, and the market participants." *Id.* at 182a. The Board concluded that the claims merely recite an "abstract idea" since they are not "instantiated in some physical way so as to become a practical application of the idea." *Id.* at 184a. Recognizing that actual physical acts of individuals or organizations would still be required to implement the steps of the method, the Board nevertheless held that the claims were directed to the "'abstract idea' itself" because they cover any and every possible way of performing those steps. *Id.*

C. The Federal Circuit's En Banc Decision

The Bilski applicants appealed the PTO Board's decision to the Court of Appeals for the Federal Circuit under 35 U.S.C. § 141. The Federal Circuit had jurisdiction over the appeal pursuant to 28 U.S.C. § 1295(a)(4)(A). In its brief to the Federal Circuit, the PTO observed that the court "has had little opportunity to address the eligibility of this brand of method inventions," and that "the PTO has struggled to offer its examiners clear guidance on this issue." Br. for Appellee (June 13, 2007) at 4. Further, the PTO noted that it has "been inundated with an unprecedented number of patent applications" that claim processes but "do not require any machine or apparatus for implementing the method, nor do the claims require any transformation of subject matter, tangible or intangible, from one state into another." *Id.* The PTO therefore "welcome[d] this opportunity for [the Federal Circuit] to resolve this important question." *Id.*

After argument before a panel of the court, but before any decision, the Federal Circuit ordered that the appeal would be heard en banc. App., *infra*, 144a. According to Circuit Judge Mayer, the court took the case en banc "in a long-overdue effort to resolve primal questions on the metes and bounds of statutory subject matter." App., *infra*, 131a (Mayer, J., dissenting). In its en banc Order, the court posed five questions to be addressed in supplemental briefing:

> (1) Whether claim 1 of the [Bilski] patent application claims patent-eligible subject matter under 35 U.S.C. § 101?
>
> (2) What standard should govern in determining whether a process is patent-eligible subject matter under section 101?
>
> (3) Whether the claimed subject matter is not patent-eligible because it constitutes an abstract idea or mental process; when does a claim that contains both mental and physical steps create patent-eligible subject matter?
>
> (4) Whether a method or process must result in a physical transformation of an article or be tied to a machine to be patent-eligible subject matter under section 101?
>
> (5) Whether it is appropriate to reconsider *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), and *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999), in this case and, if so, whether those cases should be overruled in any respect?

App., *infra*, 144a-145a.

Responding to these questions and the en banc Order, thirty-eight amicus briefs were filed by patent owners, bar associations, industry associations, professors, and interested individuals. The various *amici* represented diverse industries, including financial services, management consulting, computer software, biotechnology, insurance, and tax accounting. The Federal Circuit also invited two *amici* to participate at oral argument. Those *amici* presented vastly different views on the proper interpretation of this Court's precedent concerning patent-eligible processes under § 101.

In a fractured decision, the en banc Federal Circuit held that Bilski's claims are not eligible for patenting and set forth a single, "definitive" test for determining whether a process is patent-eligible under § 101: a process is patent-eligible only if "(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing." App., *infra*, 12a. Although the Supreme Court has twice expressly declined to hold that this so-called "machine-or-transformation" test is the only test for patentable processes under § 101, *see Gottschalk v. Benson*, 409 U.S. 63, 71 (1972); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978), the Federal Circuit majority opinion seized on a sentence from *Diamond v. Diehr*, 450 U.S. 175, 184 (1981), quoted from *Benson*, 409 U.S. at 70, that "[t]ransformation and reduction of an article 'to a different state or thing' is *the* clue to the patentability of a process claim that does not include particular machines" (emphasis added). Taking this Court's description of the machine-or-transformation test as "*the*" clue literally, the majority held that this test was not "optional or merely advisory" but rather "the only applicable test" for patent-eligible processes. App., *infra*, 15a-16a, n.11, 34a.

In doing so, the Federal Circuit majority overruled its earlier decisions in *State Street Bank* and *AT&T* to the extent they relied on a "useful, concrete, and tangible result" as the test for patent eligibility under § 101. This formulation, which was originally set forth by the en banc Federal Circuit in *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994), was discarded in

Bilski as "inadequate." App., *infra*, 24a. Although *Alappat*, *State Street Bank*, and *AT&T* all contain extensive discussions of the same Supreme Court cases now relied on in support of the "machine-or-transformation" test, the Federal Circuit observed that "useful, concrete, and tangible result" was "never intended to supplant the Supreme Court's test." *Id.*

The Federal Circuit majority opinion nevertheless acknowledged some doubt about its interpretation of this Court's precedent as dictating that the "machine-or-transformation" test is the sole test for patentable processes. Citing this Court's opinion in *Diehr*, where the Court stated (450 U.S. at 192):

> [W]hen a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (*e.g.*, transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101.

the majority admitted that "language such as the use of 'e.g.' may indicate the Supreme Court's recognition that the machine-or-transformation test might require modification in the future." App., *infra*, 17a-18a, n.12. The majority also recognized that this Court "may ultimately decide to alter or perhaps even set aside this test to accommodate emerging technologies." *Id.* at 17a.

The Federal Circuit majority's holding that "the machine-or-transformation test is the only applicable test" for patent-eligible processes, *id.* at 34a, provoked several vigorous dissents. Reviewing two centuries of precedent and statutory history, Circuit Judge Newman maintained in dissent that the majority's test is "a new and far-reaching restriction on the kinds of inventions that are eligible to participate in the patent system." *Id.* at 60a. The majority's decision, she wrote, introduces untold uncertainties that "not only diminish the incentives available to new enterprise, but disrupt the settled expectations of those who relied on the law as it existed." *Id.* at 61a.

Circuit Judge Rader likewise dissented because, in his view, the majority's machine-or-transformation test "disrupts settled and wise principles of law." *Id.* at 134a. In particular, he wrote, "the statute does not mention 'transformations' or any of the other Industrial Age descriptions of subject matter categories that this court endows with inordinate importance today." *Id.* at 142a-143a. According to Judge Rader, the majority's test "propagates unanswerable questions" and "links patent eligibility to the age of iron and steel at a time of subatomic particles and terabytes." *Id.* at 134a, 142a.

Also in dissent, Circuit Judge Mayer wrote that the majority's test is "unnecessarily complex and will only lead to further uncertainty regarding the scope of patentable subject matter." *Id.* at 131a. While the PTO and the larger patent community have actively sought guidance from the Federal Circuit on this issue, Judge Mayer contended that "[t]he majority's 'measured approach' to the section 101 analysis . . . will do little to restore public confidence in the patent system." *Id.* at 132a.

REASONS FOR GRANTING THE PETITION

I. THE FEDERAL CIRCUIT'S RIGID "MACHINE-OR-TRANSFORMATION" TEST CONFLICTS WITH THIS COURT'S PRECEDENT AND CONGRESSIONAL INTENT

In its last two decisions on § 101, the Supreme Court set forth the proper test for patentable subject matter: "anything under the sun that is made by man" except "laws of nature, natural phenomena, and abstract ideas." *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980); *Diamond v. Diehr*, 450 U.S. 175, 182, 185 (1981). The Court should grant the petition so that it can instruct the Federal Circuit to return to these first principles and restore the law of patent eligibility for processes under § 101.

Section 101 of the Patent Act provides patent eligibility for "any" new and useful process. In *Chakrabarty*, this Court noted that "Congress plainly contemplated that the patent laws would be given wide scope." 447 U.S. at 308. Indeed, the Court was informed by Congressional intent that statutory subject matter "include anything under the sun that is made by man." *Id.* at 309 (quoting S. REP. NO. 82-1979, at 5 (1952), as reprinted in 1952 U.S.C.C.A.N. 2394, 2399; H.R. REP. NO. 82-1923 at 6 (1952)). The Court observed, however, that "laws of nature, physical phenomena, and abstract ideas have been held not patentable." *Id.*

Diamond v. Diehr then set forth the broad framework for analyzing the eligibility of process claims for patenting under § 101. The Court again acknowledged Congress' intent that statutory subject matter "include anything under the sun that is made by man," and that "laws of nature, natural phenomena, and abstract ideas" are excluded from protection. 450 U.S. at 182, 185. Under *Diehr*, a process claim that includes one of these fundamental principles is eligible for patenting so long as the process, taken as a whole, represents "an *application* of a law of nature or mathematical formula." *Id.* at 187. The *Diehr* Court likened a process including an abstract idea to the discovery of an unknown phenomenon of nature: "If there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end." *Id.* at 188 n.11 (quoting *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948)). This distinction between a practical application and an abstract principle should be the dividing line for patentable subject matter—not the Federal Circuit's rigid "machine-or-transformation" test.

The Supreme Court has twice expressly declined to hold that the "machine-or-transformation" test is the only test for determining whether a process is eligible for patenting under § 101, as the Federal Circuit majority has now done. *In Gottschalk v. Benson*, 409 U.S. 63, 71 (1972), the Court wrote:

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a "different state or thing." We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.

The Court reaffirmed this position in *Parker v. Flook*:

> The statutory definition of "process" is broad. An argument can be made, however, that this Court has only recognized a process as within the statutory definition when it either was tied to a

> particular apparatus or operated to change materials to a "different state or thing." As in Benson, we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents.

437 U.S. 584, 588 n.9 (1978) (citations omitted).

Contrary to this Court's precedent, the Federal Circuit majority held that the machine-or-transformation test is not "optional or merely advisory" but rather "the only applicable test" for patent-eligible processes. App., *infra*, 15a-16a, n.11, 34a. In doing so, the Federal Circuit majority misread the cases, relying on a statement in *Diehr*, 450 U.S. at 184 (quoting *Benson*, 409 U.S. at 70), that transformation is "*the*" clue to patentability as mandating the rigid "machine-or-transformation" test. App., *infra*, 15a-16a. But *Benson* itself expressly did not hold that a process must be tied to a machine or transform subject matter to be eligible for patenting. 409 U.S. at 71. And *Diehr* cited the transformation test as only an example (using the signal "*e.g.*") of a process that would satisfy § 101. 450 U.S. at 192.

Less than ten years ago, the Federal Circuit considered these very same Supreme Court cases in *State Street Bank* and *AT&T* and reached a different conclusion. At that time, instead of imposing a mandatory "machine-or-transformation" requirement for patent eligible processes under § 101, the court used a "useful, concrete, and tangible result" as the test for patent eligibility. *State Street Bank*, 149 F.3d at 1373; *AT&T*, 172 F.3d at 1361; *see also In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994) (en banc). Now, the Federal Circuit majority has simply changed course with no new guidance from this Court or Congress, thereby disrupting what were previously "settled and wise principles of law." App., *infra*, 134a (Rader, J., dissenting).

Absent clear legislative guidance that process patents must be tied to a particular machine or transform subject matter, the courts should not impose such limitations. This Court has more than once cautioned that "courts 'should not read into the patent laws limitations and conditions which the legislature has not expressed.'" *Chakrabarty*, 447 U.S. at 308 (quoting *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 199 (1933)); *Diehr*, 450 U.S. at 182. A primary strength of the Patent Act is the lack of subject matter exclusions, leaving the door open for emerging technologies. By design, "Congress employed broad general language in drafting § 101 precisely because such inventions are often unforeseeable." *Chakrabarty*, 447 U.S. at 316.

Most recently, Congress embraced the Federal Circuit's holding in *State Street Bank*, 149 F.3d at 1373, that a process involving an abstract idea is patentable if it produces a "useful, concrete, and tangible result," as the proper interpretation of § 101. Enacting 35 U.S.C. § 273 to provide a prior inventor defense to infringement of business method patents, Congress explained: "[a]s the Court [in *State Street Bank*] noted, the reference to the business method exception had been improperly applied to a wide variety of processes, blurring the essential question of whether the invention produced a 'useful, concrete, and tangible result.'" 145 Cong. Rec. S14696-03, S14717 (daily ed. Nov. 17, 1999). As acknowledged by Congress, the "essential question" for process patenting is whether a process applies a fundamental principle to a useful end result, not whether the process is tied to a particular machine or transforms articles.

The Federal Circuit majority's "machine-or-transformation" test is unnecessarily restrictive on patent-eligible subject matter under § 101 and contrary to the plain language of the statute that "any new and useful process" is eligible for patenting. The *Diehr* test, excluding only "laws of nature, physical phenomena, and abstract ideas," has proven flexible enough to adapt to emerging technologies, such as a data processing system for managing a financial services configuration of a portfolio, *State Street Bank*, 149 F.3d at 1373 ("In *Diehr*, the Court explained that certain types of mathematical subject matter, standing alone, represent nothing more than abstract ideas until reduced to some type of practical application."), a method for automatically routing interexchange calls in a telecommunications system, *AT&T*, 172 F.3d at 1356-57 ("In *Diehr*, the Court expressly limited its two earlier decisions in *Flook* and *Benson* by emphasizing that these cases did no more than confirm the 'long-established principle' that laws of nature, natural phenomena, and abstract ideas are excluded from patent protection."), and a method for analyzing electrocardiograph signals to detect heart problems, *Arrhythmia Research Tech., Inc. v. Corazonix Corp.*, 958 F.2d 1053, 1057 (Fed. Cir. 1992) ("In *Diamond v. Diehr* the Court explained that non-statutory status under section 101 derives from the 'abstract', rather than the 'sweeping', nature of a claim that contains a mathematical algorithm."), among many others.

The Bilski invention, while not meeting the Federal Circuit's rigid "machine-or-transformation" test, is not merely an "abstract idea." It should be eligible for patenting under § 101 and fully examined for patentability under the other provisions of the Patent Act. Attempts to fuse § 101 with other requirements of patentability, such as whether the invention is novel (§ 102), unobvious (§ 103), or sufficiently described (§ 112), are improper. This Court has explained that:

> Section 101 . . . is a general statement of the type of subject matter that is eligible for patent protection "subject to the conditions and requirements of this title." Specific conditions for patentability follow . . . . The question therefore of whether a particular invention is novel is "wholly apart from whether the invention falls into a category of statutory subject matter."

Diehr, 450 U.S. at 189-90 (quoting *In re Bergy*, 596 F.2d 952, 961 (C.C.P.A. 1979)). Barring the Bilski invention at the door of § 101 based on the "machine-or-transformation" test is contrary to the statute and this Court's precedent.

II. CERT. SHOULD BE GRANTED TO PREVENT THE FEDERAL CIRCUIT AND THE PTO FROM LIMITING PROCESS PATENTS TO MANUFACTURING METHODS

With the *Bilski* decision and more recent decisions that follow it, both the Federal Circuit and the PTO have essentially limited process patents to manufacturing methods and excluded business methods, contrary to the patent statute. Although the plain language of § 101 extends patent eligibility to "any new and useful process, machine, manufacture, or composition of matter," both the Federal Circuit and the PTO now insist that a patent-eligible "process" must be tied to one of the other statutory categories. Circuit Judge Newman admonished that "the United States Supreme Court has never held that 'process' inventions suffered a second-class status under our statutes, achieving patent eligibility only derivatively through an explicit 'tie' to another statutory category." App., *infra*, 89a (Newman, J., dissenting).

Nonetheless, a panel of the Federal Circuit recently conferred such second-class status on process inventions. *In re Comiskey*, ___ F.3d ___, 2009 WL 68845, at *8 (Fed. Cir. Jan. 13, 2009). In *Comiskey*, the Federal Circuit held that "a claim reciting an algorithm or abstract idea can state statutory subject matter only if, as employed in the process, it is embodied in, operates on, transforms, or otherwise involves another class of statutory subject matter, i.e., a machine, manufacture, or composition of matter." *Id.* In other recent decisions, the PTO Board of Patent Appeals and Interferences listed only manufacturing processes from the 19th and early 20th centuries as examples of processes sufficiently transformative to be eligible for patenting. *Ex parte Langemyr*, 2008 WL 5206740, slip op. at 9, n.3 (B.P.A.I. May 28, 2008); *Ex parte Wasynczuk*, 2008 WL 2262377, slip op. at 12-13, n.3 (B.P.A.I. June 2, 2008).

Requiring transformation of subject matter improperly restricts patent-eligible processes to manufacturing methods and "freeze[s] process patents to old technologies, leaving no room for the revelations of the new, onrushing technology," despite this Court's precedent to the contrary. *See Benson*, 409 U.S. at 71. This flies in the face of the long-held tenet that "the inventions most benefitting mankind are those that 'push back the frontiers.'" *Chakrabarty*, 447 U.S. at 316 (quoting *Great A. & P. Tea Co. v. Supermarket Corp.*, 340 U.S. 147, 154 (1950)).

While the Federal Circuit majority purported to reject a categorical exclusion of business method patents, App., *infra*, 25a, its holding has the practical effect of precluding most patents on business methods. Many business methods relate to human behavior or the flow of information, neither of which would satisfy the Federal Circuit's "machine-or-transformation" test. The *Diehr* test, on the other hand, can be applied to modern-day business processes as readily as to by-gone manufacturing processes, or even to the paper-based business innovations from the earliest days of the patent system.[1]

Restricting process patents to manufacturing methods that satisfy the "machine-or-transformation" test is not only backward-looking, it is inconsistent with the patent statute's recognition that business methods are eligible for patenting. *See* 35 U.S.C. § 273(a)(3) ("[T]he term 'method' means a method of doing or conducting business."). The American Inventors' Protection Act of 1999 enacted a prior user defense to infringement of business method patent claims to protect those who had mistakenly thought commercialized business methods are not patentable. 35 U.S.C. § 273. In this act, Congress embraced both business methods and the Federal Circuit's *State Street Bank* "useful, concrete, and tangible result" test. 145 Cong. Rec. S14696-03, S14717 (daily ed. Nov. 17, 1999) ("As the Court [in State Street Bank] noted, the reference to the business method exception had been improperly applied to a wide variety of processes, blurring the essential question of whether the invention produced a 'useful, concrete, and tangible result.'").

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[1] *See, e.g.*, U.S. Patent No. 480,423 ("Method of Preventing Fraud in the Sale of Newspapers and Other Publications" (1892)); U.S Patent No. 575,731 ("Insurable Property Chart" (1897)); U.S. Patent No. 138,891 ("Revenue Stamps" (1873)).

Enacting § 273, Congress further recognized that patents protect pure business methods that produce a useful end result, including:

> methods used in connection with internal commercial operations as well as those used in connection with the sale or transfer of useful end results—whether in the form of physical products, or in the form of services, or in the form of some other useful results; for example, results produced through the manipulation of data or other inputs to produce a useful result.

Id. Since enacting § 273, Congress has declined several opportunities to legislate in the area of business method patents. Three recent Congresses have considered bills to curtail business method patenting, but none has been enacted. *See* H.R. 5364, 106th Cong. (2000); H.R. 1332, 107th Cong. (2001); H.R. 5299, 108th Cong. (2004). Where Congress has declined to place limitations on patent-eligible subject matter, the courts should not impose them. *Chakrabarty*, 447 U.S. at 308; *Diehr*, 450 U.S. at 182.

Review by this Court is needed to stop the Federal Circuit and its "machine-or-transformation" test from confining business method patents to the manufacturing processes of America's past. To ensure liberal encouragement to the innovators of America's information economy, the petition for certiorari should be granted.

III. INTERPRETATION OF SECTION 101 IS A QUESTION OF EXCEPTIONAL IMPORTANCE TO BOTH THE PATENT SYSTEM AND THE NATION'S ECONOMY

The Federal Circuit's decision legislates new public policy that endangers innovation and upsets the settled expectations of patent owners and the inventing public. By narrowing patent eligibility to only those processes that satisfy the "machine-or-transformation" test, the Federal Circuit "links patent eligibility to the age of iron and steel at a time of subatomic particles and terabytes." App., *infra*, 134a (Rader, J., dissenting). This policy shift calls into question the validity of thousands of issued patents and threatens to stifle innovation in emerging technologies that drive today's information-based economy. Moreover, mounting uncertainty over how the PTO and courts will apply the "machine-or-transformation" test threatens innovation in established fields that are central to the U.S. economy, such as computer software and biotechnology.

1. Patents encourage innovation. The intentional breadth of the Patent Act "embodie[s] Jefferson's philosophy that 'ingenuity should receive a liberal encouragement.'" *Chakrabarty*, 447 U.S. at 308-09 (quoting 5 WRITINGS OF THOMAS JEFFERSON 75-76 (Washington ed. 1871)). A recent study of global intellectual property protections found that eight of the top ten most innovative countries were also among the top ten in strength of patent protection. Edwin Lai, *Intellectual Property Protection in a Globalizing Era: Insights from the Federal Reserve Bank of Dallas*, ECONOMIC LETTER, Vol. 3, No. 3, at 5 (Mar. 2008). The study concluded that inadequate patent protection "greatly discouraged" innovation. *Id.* at 4.

With the decision below, the Federal Circuit threatens to impede innovation by retreating from its formerly technology-neutral position that "[t]he use of the expansive term 'any' in § 101 represents Congress's intent not to place any restrictions on the subject matter for which a patent may be obtained beyond those specifically recited in § 101 and the other parts of Title 35." *In re Alappat*, 33 F.3d 1526, 1542 (Fed. Cir. 1994) (en banc). This reversal is contrary to "U.S. law and policy [that] have embraced advances without regard to their subject matter. That promise of protection, in turn, fuels the research that, at least for now, makes this nation the world's innovation leader." App., *infra*, 137a (Rader, J., dissenting). *See also* Robert Greene Sterne & Lawrence B. Bugaisky, *The Expansion of Statutory Subject Matter Under the 1952 Patent Act*, 37 AKRON L. REV. 217, 225 (2004) (arguing that its lack of subject matter exclusions is the strength of the Patent Act).

Requiring processes to be tied to a machine or transform articles limits the patent incentives available to breakthroughs at the forefront of technology in fields known (*e.g.*, internet commerce, information technology, industrial engineering, bioinformatics) and unknown. Frontier innovations have always challenged the PTO and the courts, but their value has long been recognized. Innovations such as the telephone and telegraph were at first declared unpatentable by the PTO. *See* Sandra Szczerbicki, *The Shakedown on State Street*, 79 OR. L. REV. 253 (2000). Computer software and man-made bacterium faced similar obstacles. *Id.* at 254; *see also Chakrabarty*, 447 U.S. at 306. The Patent Act, however, was designed to accommodate and encourage just such unanticipated inventions. "Congress employed broad general language in drafting § 101 precisely because such inventions are often unforeseeable." *Chakrabarty*, 447 U.S. at 316. Indeed, "[a] rule that unanticipated inventions are without protection would conflict with the core concept of the patent law that anticipation undermines patentability." *Id.*

2. The Federal Circuit decision is particularly harmful to innovations of the knowledge economy, which have been dominant contributors to economic growth. The "machine-or-transformation" test "excludes many of the kinds of inventions that apply today's electronic and photonic technologies, as well as other processes that handle data and information in novel ways. Such processes have long been patent eligible, and contribute to the vigor and variety of today's Information Age." App., *infra*, 60a (Newman, J., dissenting). Innovation in the knowledge economy thrives beyond the traditional scientific and engineering fields and includes new and useful business-related processes, which may or may not be implemented on a machine.

Some have estimated that denying patent protection to the innovations of the knowledge economy would exclude as much as seventy percent of the U.S. economy from patent protection. Jeffrey R. Kuester & Lawrence E. Thompson, *Risks Associated with Restricting Business Method and E-Commerce Patents*, 17 GA. ST. U. L. REV. 657, 683 (2001). Businesses related to the management of companies and enterprises contributed $271.3 billion to the U.S. gross domestic product in 2007, while the information technology industry contributed $586.3 billion. SOO JEONG KIM ET AL., U.S. DEP'T OF COM., ANNUAL INDUSTRY ACCOUNTS: SURVEY OF CURRENT BUSINESS 32 (Dec. 2008). Internet-based commerce reached $1 trillion in 2002 and was expected to increase to nearly $6 trillion in 2006. JOHN GANTZ, ENABLING TOMORROW'S INNOVATION: AN IDC WHITE PAPER AND BSA CEO OPINION POLL *ii*. (Oct. 2003). Innovations in these fields involve organizations, human beings, and the flow of information. The "machine-or-transformation" test lacks the flexibility to adapt to these developments and provide the encouragement intended by the patent laws.

The Federal Circuit's decision denies patent eligibility to the very industries that are leading today's economic growth. At a time of a "widespread deceleration" in durable-goods manufacturing, the information technology and communications industries grew by 13%. KIM ET AL., *supra*, at 21, 23. Indeed, in 2007, overall GDP growth was led by industries including professional and business services and information technology. *Id*. at 23. Restricting § 101 to exclude patent eligibility in these fields runs counter to this Court's direction that "[t]he subject-matter provisions of the patent law have been cast in broad terms to fulfill the constitutional and statutory goal of promoting 'the Progress of Science and the useful Arts' with all that means for the social and economic benefits envisioned by Jefferson." *Chakrabarty*, 447 U.S. at 315.

3. The decision below ushers in a new, restrictive view of § 101, introducing uncertainties that "not only diminish the incentives available to new enterprise, but disrupt the settled expectations of those who relied on the law as it existed." App., *infra*, 61a (Newman, J., dissenting). Furthermore, "[a]dherence to settled law, resulting in settled expectations, is of particular importance 'in cases involving property . . . rights, where reliance interests are involved.'" *Id*. at 95a (Newman, J., dissenting) (quoting *Payne v. Ten-*

nessee, 501 U.S. 808, 828 (1991)). Congressional action is required to change such well-settled rules because "[f]undamental alterations in these rules risk destroying the legitimate expectations of inventors in their property." *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722, 739 (2002).

The Federal Circuit's adoption of the "machine-or-transformation" test calls into question countless process patents issued before the PTO and Federal Circuit began applying this more restrictive test. This Court has more than once admonished that "courts must be cautious before adopting changes that disrupt the settled expectations of the inventing community." *Id.* at 739 (citing *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 28 (1997)).

Like the doctrine of equivalents issue in *Festo*, the patentability of processes that apply a fundamental principle to produce a useful result was settled. Business methods were patentable before *State Street Bank*, and they remain patentable in accordance with Congress's intent, as evidenced by 35 U.S.C. § 273. *See State Street Bank*, 149 F.3d at 1375 (stating that a "business method exception has never been invoked by this court, or the CCPA, to deem an invention unpatentable"). Tens of thousands of patents have issued for business methods, software and information processes, and biotechnology methods. Just as this Court warned in *Festo*, "[t]o change so substantially the rules of the game now could very well subvert the various balances the PTO sought to strike when issuing the numerous patents which have not yet expired and which would be affected by our decision." 535 U.S. at 739 (quoting *Warner-Jenkinson*, 520 U.S. at 32 n.6). By requiring that process patents produce some physical transformation or be tied to a machine, the Federal Circuit has ventured into territory reserved for the legislature and disrupted the settled expectations of patent owners and inventors alike.

4. While directed to a "business method," the Federal Circuit's decision threatens many of the nation's fundamental industries, including software and biotechnology.[2] The software industry is fundamental to the U.S. economy, representing billions of dollars and millions of jobs. A recent report by the Software and Information Industry Association revealed that the software and information industry generated $564 billion in 2005, outpacing traditional brick and mortar industries such as food manufacturing and computer and electronic products manufacturing. SOFTWARE & INFO. INDUS. ASS'N, SOFTWARE AND INFORMATION: DRIVING THE GLOBAL KNOWLEDGE ECONOMY 7-8 (2008).

As the software industry has grown, tens of thousands of software patents have issued and are currently in force. Indeed, the software industry report noted that "[t]he U.S. software and information industries depend on a meaningful international framework to protect the industries' intellectual property . . . ." *Id.* at 11. The *Bilski* decision casts doubt on these protections. Software patents that were examined and issued under a different standard for eligibility under § 101 are left vulnerable to attack. In a recent survey, software industry executives cautioned that adequate intellectual property protection is one of the top challenges to technology-based innovation. GANTZ, *supra*, at 12 (warning that "[i]f commercial software companies can't protect their work, investors won't invest, innovators won't invent and the IT sector won't be able to achieve its full economic potential.").

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[2] The importance of the question presented and its broad application beyond business methods is further evidenced by the extensive participation in the Federal Circuit by amicus curiae from diverse industries including financial services, management consulting, computer software, biotechnology, insurance, and tax accounting.

The *Bilski* decision also creates uncertainty for the biotechnology and pharmaceutical industries, which rely on patent protection to recoup hundreds of millions of dollars spent on research and development. The Federal Circuit has already relied on *Bilski* to invalidate claims in an issued patent for an immunization method. *Classen Immunotherapies, Inc. v. Biogen IDEC*, 2008 WL 5273107 (Fed. Cir. Dec. 19, 2008). Similarly, the PTO Board of Appeals has rejected an application for a diagnostic method involving an individual cornea of an eye. *Ex parte Roberts*, 2008 WL 2754746 (B.P.A.I. July 15, 2008). The uncertainties caused by the "machine-or-transformation" test are the "enemy of innovation." App., *infra*, 61a (Newman, J., dissenting).

5. The urgency of the issues involved in this case is underscored by the PTO's continuing struggle to apply the "machine-or-transformation" test. The PTO, in the Board's opinion and its Federal Circuit brief, acknowledged that it is struggling with the influx of patent applications for processes. App., *infra*, 151a; Br. for Appellee (June 13, 2007), at 4. It further recognized the importance of the issue and the need for guidance. App., *infra*, 151a, 154a; Br. for Appellee (June 13, 2007), at 4. The Federal Circuit majority opinion, however, and its adoption of the "machine-or-transformation" test, has not provided the needed guidance on this important issue.

Despite the Federal Circuit's holding that the "machine-or-transformation" test is the applicable test to determine whether a claim is drawn to a patent-eligible process under § 101, the PTO Board of Appeals has applied the test to non-method claims in several cases. *See, e.g.*, *Ex parte Godwin*, 2008 WL 4898213 (B.P.A.I. Nov. 13, 2008) (rejecting claims directed to a "portal server system" and a "portal server"); *Ex parte Noguchi*, 2008 WL 4968270 (B.P.A.I. Nov. 20, 2008) (rejecting claims to a "program for causing a computer connected to an external network to perform the functions of . . ."). The Board of Appeals has also interpreted *Bilski* as requiring that a process that transforms data must also be tied to a machine to establish patent eligibility, essentially applying a machine-and-transformation test. *See, e.g.*, *Ex parte Godwin* ("[T]he purported transformation of data, without a machine, is insufficient to establish patent-eligibility under § 101."); *Ex parte Noguchi* ("To the extent that Appellants' claims may transform data, we note that transformation of data, without a machine, is insufficient to establish patent-eligibility under § 101.")

In its attempt to find a "definitive" test for process patent eligibility, the Federal Circuit has disrupted settled expectations and called into question the validity of thousands of issued patents in industries central to the nation's economy. The issue in this case, i.e., the proper scope of patentable subject matter under § 101, is not only important to the nation's economy, it is "one of the broadest, most sweeping issues in patent law." *In re Comiskey*, __F.3d__, 2009 WL68845 at *16 n.2 (Fed. Cir. Jan. 13, 2009) (en banc) (order granting limited reh'g) (Moore, J., dissenting). The gravity of this issue warrants review by this Court.

IV. THIS CASE IS A GOOD VEHICLE FOR RESOLVING THE QUESTIONS PRESENTED

In the nearly thirty years since the Court last considered what can be patented under § 101, the U.S. economy has evolved from one tied to manufacturing to one based on information. Rather than allowing the flexible *Diehr* test to adapt to innovations of today's knowledge economy, the *Bilski* majority anchored patentable processes with its rigid "machine-or-transformation" test. As Circuit Judge Rader lamented, "as innovators seek the path to the next techno-revolution, [the Federal Circuit] ties our patent system to dicta from an industrial age decades removed from the bleeding edge." App., *infra*, 134a (Rader, J., dissenting). To restore the broad flexibility of § 101, this Court's review is needed.

This case presents the opportunity for the Court to address process claims under § 101, which it appeared ready to do when it granted, then dismissed, certiorari in *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124 (2006). *Bilski* now provides a good vehicle for such review. Unlike *Lab. Corp.*, the issue of patentable processes under § 101 was properly raised and thoroughly analyzed in both the PTO and the Federal Circuit.

The PTO has acknowledged that this is a good case for review. When the Bilski applicants appealed the patent examiner's rejections under § 101 to the PTO Board of Appeals, a three-judge panel of the Board heard oral arguments. Rather than decide the case based on that hearing, the Board held a second hearing before an expanded five-judge panel. App., *infra*, 146a & n.2. In its 70-page opinion, the enlarged panel explained that "[t]he question of whether this type of non-machine-implemented subject matter is patentable is a common and important one to the [PTO], as the bounds of patentable subject matter are increasingly being tested." *Id.* at 151a. In its brief to the Federal Circuit, the PTO welcomed the opportunity to resolve the "important question" presented and acknowledged that "the PTO has struggled to offer its examiners clear guidance on this issue." Br. for Appellee (June 13, 2007), at 4.

The Federal Circuit likewise chose this case as the vehicle to decide the important question of patent eligibility for processes and to overrule its prior decisions in *State Street Bank* and *AT&T*. The court recognized the broad applicability of the questions presented when it stayed other pending § 101 cases while deciding Bilski. *See In re Comiskey*, ___ F.3d ___, 2009 WL 68845 (Fed. Cir. Jan. 13, 2009) (staying consideration of petition for rehearing in case involving business method claims); *Prometheus Labs., Inc. v. May Collaborative Srvs.*, No. 2008-1403 (Fed. Cir. July 29, 2008) (staying briefing in case involving diagnostic method claims). When the court finally decided *In re Comiskey*, ___ F.3d ___, 2009 WL 68845 (Fed. Cir. Jan. 13, 2009), the decision modified an earlier decision, 499 F.3d 1365 (Fed. Cir. 2007), which had been vacated by the en banc court and returned to the panel for correction. Although the need for correction alone might suggest some confusion at the Federal Circuit, the court ended up issuing four separate concurring and dissenting opinions from the denial of a more broad rehearing en banc. In dissent, Circuit Judge Newman objected that, even after *Bilski*, "[t]he court continues to present a broad and ill-defined exclusion of 'business methods' from access to the patent system, an exclusion that is poorly adapted to today's new and creative modalities of data handling and knowledge utilization." 2009 WL 68845 at *21. Simply put, the Federal Circuit's *Bilski* decision has not laid to rest the issues concerning patenting of business methods.

Because the Federal Circuit has exclusive jurisdiction over patent cases, there can be no split in the circuits on this issue. The several opinions below, however, have comprehensively explored the issues and the competing policies, so there is no need to wait for further development of the law. Rather, the sharply-divided opinions of the Federal Circuit show that what is needed now is guidance from this Court. Indeed, the en banc court essentially invited Supreme Court review of the "machine-or-transformation" test, acknowledging that the Court "may ultimately decide to alter or perhaps even set aside this test to accommodate emerging technologies." App., *infra*, 17a.

Moreover, there is unlikely to be a better case presented any time soon. As the PTO Board noted in this case, "[o]nly a very small fraction of the cases examined by the Examining Corps are ever appealed to the [PTO Board], and only a very small fraction of the rejections affirmed by the Board will ever be appealed to the Federal Circuit." App., *infra*, 153a; *see also Ex parte Lundgren*, 76 U.S.P.Q.2d 1385, 1389 (B.P.A.I. 2005) (Smith, J., dissenting) ("Unfortunately, the federal judiciary cannot get jurisdiction of this issue [i.e., patent eligibility for business methods] unless someone takes the issue to it."). The Court should take this opportunity to restore the law for patent eligibility of processes under 35 U.S.C. § 101.

CONCLUSION

For these reasons, the petition for a writ of certiorari should be granted.

Respectfully Submitted,

J. MICHAEL JAKES
Counsel of Record
ERIKA H. ARNER
FINNEGAN, HENDERSON,
FARABOW, GARRETT &
DUNNER, L.L.P.
901 New York Avenue, N.W.
Washington, D.C. 20001
(202) 408-4000

RONALD E. MYRICK
DENISE W. DEFRANCO
FINNEGAN, HENDERSON,
FARABOW, GARRETT &
DUNNER, L.L.P.
55 Cambridge Parkway
Cambridge, Massachusetts 02142
(617) 452-1600

APPENDIX

APPENDIX A

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

No. 2007-1130
(Serial No. 08/833,892)

IN RE BERNARD L. BILSKI AND RAND A. WARSAW.

Appeal from the United States Patent and
Trademark Office, Board of Patent Appeals
and Interferences.

Oct. 30, 2008.

Before MICHEL, Chief Judge, NEWMAN, MAYER, LOURIE, RADER, SCHALL, BRYSON, GAJARSA, LINN, DYK, PROST, and MOORE, Circuit Judges.

Opinion for the court filed by Chief Judge MICHEL, in which Circuit Judges LOURIE, SCHALL, BRYSON, GAJARSA, LINN, DYK, PROST, and MOORE join. Concurring opinion filed by Circuit Judge DYK, in which Circuit Judge LINN joins. Dissenting opinion filed by Circuit Judge NEWMAN. Dissenting opinion filed by Circuit Judge MAYER. Dissenting opinion filed by Circuit Judge RADER.

MICHEL, Chief Judge.

Bernard L. Bilski and Rand A. Warsaw (collectively, "Applicants") appeal from the final decision of the Board of Patent Appeals and Interferences ("Board") sustaining the rejection of all eleven claims of their U.S. Patent Application Serial No. 08/833,892 ("'892 application"). See Ex parte Bilski, No.2002-2257, 2006 WL 5738364 (B.P.A.I. Sept. 26, 2006) ("Board Decision"). Specifically, Applicants argue that the examiner erroneously rejected the claims as not directed to patent-eligible subject matter under 35 U.S.C. § 101, and that the Board erred in upholding that rejection. The appeal was originally argued before a panel of the court on October 1, 2007. Prior to disposition by the panel, however, we sua sponte ordered en banc review. Oral argument before the en banc court was held on May 8, 2008. We affirm the decision of the Board because we conclude that Applicants' claims are not directed to patent-eligible subject matter, and in doing so, we clarify the standards applicable in determining whether a claimed method constitutes a statutory "process" under § 101.

I.

Applicants filed their patent application on April 10, 1997. The application contains eleven claims, which Applicants argue together here. Claim 1 reads:

> A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:
>
> > (a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer;
> >
> > (b) identifying market participants for said commodity having a counter-risk position to said consumers; and

> (c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions

'892 application cl.1. In essence, the claim is for a method of hedging risk in the field of commodities trading. For example, coal power plants (i.e., the "consumers") purchase coal to produce electricity and are averse to the risk of a spike in demand for coal since such a spike would increase the price and their costs. Conversely, coal mining companies (i.e., the "market participants") are averse to the risk of a sudden drop in demand for coal since such a drop would reduce their sales and depress prices. The claimed method envisions an intermediary, the "commodity provider," that sells coal to the power plants at a fixed price, thus isolating the power plants from the possibility of a spike in demand increasing the price of coal above the fixed price. The same provider buys coal from mining companies at a second fixed price, thereby isolating the mining companies from the possibility that a drop in demand would lower prices below that fixed price. And the provider has thus hedged its risk; if demand and prices skyrocket, it has sold coal at a disadvantageous price but has bought coal at an advantageous price, and vice versa if demand and prices fall. Importantly, however, the claim is not limited to transactions involving actual commodities, and the application discloses that the recited transactions may simply involve options, i.e., rights to purchase or sell the commodity at a particular price within a particular timeframe. See J.A. at 86-87.

The examiner ultimately rejected claims 1-11 under 35 U.S.C. § 101, stating: "[r]egarding ... claims 1-11, the invention is not implemented on a specific apparatus and merely manipulates [an] abstract idea and solves a purely mathematical problem without any limitation to a practical application, therefore, the invention is not directed to the technological arts." See Board Decision, slip op. at 3. The examiner noted that Applicants had admitted their claims are not limited to operation on a computer, and he concluded that they were not limited by any specific apparatus. See id. at 4.

On appeal, the Board held that the examiner erred to the extent he relied on a "technological arts" test because the case law does not support such a test. Id. at 41-42. Further, the Board held that the requirement of a specific apparatus was also erroneous because a claim that does not recite a specific apparatus may still be directed to patent-eligible subject matter "if there is a transformation of physical subject matter from one state to another." Id. at 42. Elaborating further, the Board stated: "'mixing' two elements or compounds to produce a chemical substance or mixture is clearly a statutory transformation although no apparatus is claimed to perform the step and although the step could be performed manually." Id. But the Board concluded that Applicants' claims do not involve any patent-eligible transformation, holding that transformation of "non-physical financial risks and legal liabilities of the commodity provider, the consumer, and the market participants" is not patent-eligible subject matter. Id. at 43. The Board also held that Applicants' claims "preempt[ ] any and every possible way of performing the steps of the [claimed process], by human or by any kind of machine or by any combination thereof," and thus concluded that they only claim an abstract idea ineligible for patent protection. Id. at 46-47. Finally, the Board held that Applicants' process as claimed did not produce a "useful, concrete and tangible result," and for this reason as well was not drawn to patent-eligible subject matter. Id. at 49-50.

Applicants timely appealed to this court under 35 U.S.C. § 141. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

II.

Whether a claim is drawn to patent-eligible subject matter under § 101 is a threshold inquiry, and any claim of an application failing the requirements of § 101 must be rejected even if it meets all of the other legal requirements of patentability. In re Comiskey, 499 F.3d 1365, 1371 (Fed.Cir.2007)[1] (quoting Parker v. Flook, 437 U.S. 584, 593, 98 S.Ct. 2522, 57 L.Ed.2d 451 (1978)); In re Bergy, 596 F.2d 952, 960 (CCPA 1979), vacated as moot sub nom. Diamond v. Chakrabarty, 444 U.S. 1028, 100 S.Ct. 696, 62 L.Ed.2d 664 (1980). Whether a claim is drawn to patent-eligible subject matter under § 101 is an issue of law that we review de novo. Comiskey, 499 F.3d at

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[1] Although our decision in Comiskey may be misread by some as requiring in every case that the examiner conduct a § 101 analysis before assessing any other issue of patentability, we did not so hold. As with any other patentability requirement, an examiner may reject a claim solely on the basis of § 101. Or, if the examiner deems it appropriate, she may reject the claim on any other ground(s) without addressing § 101. But given that § 101 is a threshold requirement, claims that are clearly drawn to unpatentable subject matter should be identified and rejected on that basis. Thus, an examiner should generally first satisfy herself that the application's claims are drawn to patent-eligible subject matter.

1373; AT&T Corp. v. Excel Commc'ns, Inc., 172 F.3d 1352, 1355 (Fed.Cir.1999). Although claim construction, which we also review de novo, is an important first step in a § 101 analysis, see State St. Bank & Trust Co. v. Signature Fin. Group, 149 F.3d 1368, 1370 (Fed.Cir.1998) (noting that whether a claim is invalid under § 101 "is a matter of both claim construction and statutory construction"), there is no claim construction dispute in this appeal. We review issues of statutory interpretation such as this one de novo as well. Id.

A.

As this appeal turns on whether Applicants' invention as claimed meets the requirements set forth in § 101, we begin with the words of the statute:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. § 101. The statute thus recites four categories of patent-eligible subject matter: processes, machines, manufactures, and compositions of matter. It is undisputed that Applicants' claims are not directed to a machine, manufacture, or composition of matter.[2] Thus, the issue before us involves what the term "process" in § 101 means, and how to determine

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[2] As a result, we decline to discuss In re Nuijten because that decision primarily concerned whether a claim to an electronic signal was drawn to a patent-eligible manufacture. 500 F.3d 1346, 1356-57 (Fed.Cir.2007). We note that the PTO did not dispute that the process claims in Nuijten were drawn to patent-eligible subject matter under § 101 and allowed those claims.

whether a given claim—and Applicants' claim 1 in particular—is a "new and useful process."[3]

As several amici have argued, the term "process" is ordinarily broad in meaning, at least in general lay usage. In 1952, at the time Congress amended § 101 to include "process,"[4] the ordinary meaning of the term was: "[a] procedure ... [a] series of actions, motions, or operations definitely conducing to an end, whether voluntary or involuntary." WEBSTER'S NEW INTERNATIONAL DICTIONARY OF THE ENGLISH LANGUAGE 1972 (2d ed.1952). There can be no dispute that Applicants' claim would meet this definition of "process." But the Supreme Court has held that the meaning of "process" as used in § 101 is narrower than its ordinary meaning. See Flook, 437 U.S. at 588-89, 98 S.Ct. 2522 ("The holding [in Benson] forecloses a purely literal reading of § 101."). Specifically, the Court has held that a claim is not a patent-eligible "process" if it claims "laws of nature, natural phenomena, [or] abstract ideas." Diamond v. Diehr, 450 U.S. 175, 185, 101 S.Ct. 1048, 67 L.Ed.2d 155

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[3] Congress provided a definition of "process" in 35 U.S.C. § 100(b): "The term 'process' means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material." However, this provision is unhelpful given that the definition itself uses the term "process."

[4] The Patent Act of 1793 originally used the term "art" rather than "process," which remained unchanged until Congress enacted the current version of § 101 in 1952. But the Supreme Court has held that this change did not alter the scope of patent eligibility over processes because "[i]n the language of the patent law, [a process] is an art." Diamond v. Diehr, 450 U.S. 175, 182-84, 101 S.Ct. 1048, 67 L.Ed.2d 155 (1981) (quoting Cochrane v. Deener, 94 U.S. 780, 787-88, 24 L.Ed. 139 (1877)); see also Comiskey, 499 F.3d at 1375.

(1981) (citing Flook, 437 U.S. at 589, 98 S.Ct. 2522, and Gottschalk v. Benson, 409 U.S. 63, 67, 93 S.Ct. 253, 34 L.Ed.2d 273 (1972)). Such fundamental principles[5] are "part of the storehouse of knowledge of all men ... free to all men and reserved exclusively to none." Funk Bros. Seed Co. v. Kalo Inoculant Co., 333 U.S. 127, 130, 68 S.Ct. 440, 92 L.Ed. 588 (1948); see also Le Roy v. Tatham, 55 U.S. (14 How.) 156, 175, 14 L.Ed. 367 (1852) ("A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right."). "Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work." Benson, 409 U.S. at 67, 93 S.Ct. 253; see also Comiskey, 499 F.3d at 1378-79 (holding that "mental processes," "processes of human thinking," and "systems that depend for their operation on human intelligence alone" are not patent-eligible subject matter under Benson).

The true issue before us then is whether Applicants are seeking to claim a fundamental principle (such as an abstract idea) or a mental process. And the underlying legal question thus presented is what test or set of criteria governs the determination by the Patent and Trademark Office ("PTO") or courts as to whether a claim to a process is patentable under § 101 or, conversely, is drawn to unpatentable subject matter because it claims only a fundamental principle.

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[5] As used in this opinion, "fundamental principles" means "laws of nature, natural phenomena, and abstract ideas."

The Supreme Court last addressed this issue in 1981 in Diehr, which concerned a patent application seeking to claim a process for producing cured synthetic rubber products. 450 U.S. at 177-79, 101 S.Ct. 1048. The claimed process took temperature readings during cure and used a mathematical algorithm, the Arrhenius equation, to calculate the time when curing would be complete. Id. Noting that a mathematical algorithm alone is unpatentable because mathematical relationships are akin to a law of nature, the Court nevertheless held that the claimed process was patent-eligible subject matter, stating:

> [The inventors] do not seek to patent a mathematical formula. Instead, they seek patent protection for a process of curing synthetic rubber. Their process admittedly employs a well-known mathematical equation, but they do not seek to pre-empt the use of that equation. Rather, they seek only to foreclose from others the use of that equation in conjunction with all of the other steps in their claimed process.

Id. at 187, 101 S.Ct. 1048 (emphasis added).[6] The Court declared that while a claim drawn to a fundamental principle is unpatentable, "an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection." Id. (emphasis in original); see also Mackay Radio & Tel. Co. v. Radio Corp. of Am., 306 U.S. 86, 94, 59 S.Ct. 427, 83 L.Ed. 506 (1939) ("While a scientific truth, or the mathematical expression of it, is not a patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be.").

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[6] Mathematical algorithms have, in other cases, been identified instead as abstract ideas rather than laws of nature. See, e.g., State St., 149 F.3d at 1373. Whether either or both views are correct is immaterial since both laws of nature and abstract ideas are unpatentable under § 101. Diehr, 450 U.S. at 185, 101 S.Ct. 1048.

The Court in *Diehr* thus drew a distinction between those claims that "seek to pre-empt the use of" a fundamental principle, on the one hand, and claims that seek only to foreclose others from using a particular "*application*" of that fundamental principle, on the other. 450 U.S. at 187, 101 S.Ct. 1048. Patents, by definition, grant the power to exclude others from practicing that which the patent claims. *Diehr* can be understood to suggest that whether a claim is drawn only to a fundamental principle is essentially an inquiry into the scope of that exclusion; i.e., whether the effect of allowing the claim would be to allow the patentee to pre-empt substantially all uses of that fundamental principle. If so, the claim is not drawn to patent-eligible subject matter.

In *Diehr*, the Court held that the claims at issue did not pre-empt all uses of the Arrhenius equation but rather claimed only "a process for curing rubber ... which incorporates in it a more efficient solution of the equation." 450 U.S. at 188, 101 S.Ct. 1048. The process as claimed included several specific steps to control the curing of rubber more precisely: "These include installing rubber in a press, closing the mold, constantly determining the temperature of the mold, constantly recalculating the appropriate cure time through the use of the formula and a digital computer, and automatically opening the press at the proper time." *Id.* at 187, 101 S.Ct. 1048. Thus, one would still be able to use the Arrhenius equation in any process not involving curing rubber, and more importantly, even in any process to cure rubber that did not include performing "all of the other steps in their claimed process." See id.; see also Tilghman v. Proctor, 102 U.S. 707, 729, 26 L.Ed. 279 (1880) (holding patentable a process of breaking down fat molecules into fatty acids and glycerine in water specifically requiring both high heat and high pressure since other processes, known or as yet unknown, using the reaction of water and fat molecules were not claimed).

In contrast to Diehr, the earlier Benson case presented the Court with claims drawn to a process of converting data in binary-coded decimal ("BCD") format to pure binary format via an algorithm programmed onto a digital computer. Benson, 409 U.S. at 65, 93 S.Ct. 253. The Court held the claims to be drawn to unpatentable subject matter:

> It is conceded that one may not patent an idea. But in practical effect that would be the result if the formula for converting BCD numerals to pure binary numerals were patented in this case. The mathematical formula involved here has no substantial practical application except in connection with a digital computer, which means that if the judgment below is affirmed, the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself.

Id. at 71-72, 93 S.Ct. 253 (emphasis added). Because the algorithm had no uses other than those that would be covered by the claims (i.e., any conversion of BCD to pure binary on a digital computer), the claims pre-empted all uses of the algorithm and thus they were effectively drawn to the algorithm itself. See also O'Reilly v. Morse, 56 U.S. (15 How.) 62, 113, 14 L.Ed. 601 (1853) (holding ineligible a claim preempting all uses of electromagnetism to print characters at a distance).

The question before us then is whether Applicants' claim recites a fundamental principle and, if so, whether it would pre-empt substantially all uses of that fundamental principle if allowed. Unfortunately, this inquiry is hardly straightforward. How does one determine whether a given claim would pre-empt all uses of a fundamental principle? Analogizing to the facts of Diehr or Benson is of limited usefulness because the more challenging process claims of the twenty-first century are seldom so clearly limited in scope as the highly specific, plainly corporeal industrial manufacturing process of Diehr; nor are they typically as broadly claimed or purely abstract and mathematical as the algorithm of Benson.

The Supreme Court, however, has enunciated a definitive test to determine whether a process claim is tailored narrowly enough to encompass only a particular application of a fundamental principle rather than to pre-empt the principle itself. A claimed process is surely patent-eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing. See Benson, 409 U.S. at 70, 93 S.Ct. 253 ("Transformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines."); Diehr, 450 U.S. at 192, 101 S.Ct. 1048 (holding that use of mathematical formula in process "transforming or reducing an article to a different state or thing" constitutes patent-eligible subject matter); see also Flook, 437 U.S. at 589 n. 9, 98 S.Ct. 2522 ("An argument can be made [that the Supreme] Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a 'different state or thing'"); Cochrane v. Deener, 94 U.S. 780, 788, 24 L.Ed. 139 (1876) ("A process is ... an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing.").[7] A claimed process involving a fundamental principle that uses a particular machine or apparatus would not pre-empt uses of the principle that do not also use the specified machine or apparatus in the manner claimed. And a claimed process that transforms a particular article to a specified different state or thing by applying a fundamental principle would not pre-empt the use of the principle to transform any other article, to transform the same article but in a manner not covered by the claim, or to do anything other than transform the specified article.

The process claimed in Diehr, for example, clearly met both criteria. The process operated on a computerized rubber curing apparatus and transformed raw, uncured rubber into molded, cured rubber products. Diehr, 450 U.S. at 184, 187, 101 S.Ct. 1048. The claim at issue in Flook, in contrast, was directed to using a particular mathematical formula to calculate an "alarm limit"—a value that would indicate an abnormal condition during an unspecified chemical reaction. 437 U.S. at 586, 98 S.Ct. 2522. The Court rejected the claim as drawn to the formula itself because the claim did not include any limitations specifying "how to select the appropriate margin of safety, the weighting factor, or any of the other variables ... the chemical processes at work, the [mechanism for] monitoring of process variables, or the means of setting off an alarm or adjusting an alarm system." See id. at 586, 595, 98 S.Ct. 2522. The claim thus was not limited to any particular chemical (or other) transformation; nor was it tied to any specific machine or apparatus for any of its process steps, such as the selection or monitoring of variables or the setting off or adjusting of the alarm.[8] See id.

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[7] While the Court did not give explicit definitions of terms such as "tied to," "transforms," or "article," a careful analysis of its opinions and the subsequent jurisprudence of this court applying those decisions, discussed infra, informs our understanding of the Court's machine-or-transformation test.

A canvas of earlier Supreme Court cases reveals that the results of those decisions were also consistent with the machine-or-transformation test later articulated in Benson and reaffirmed in Diehr. See Tilghman, 102 U.S. at 729 (particular process of transforming fats into constituent compounds held patentable); Cochrane, 94 U.S. at 785-88 (process transforming grain meal into purified flour held patentable); Morse, 56 U.S. (15 How.) at 113 (process of using electromagnetism to print characters at a distance that was not transformative or tied to any particular apparatus held unpatentable). Interestingly, Benson presents a difficult case under its own test in that the claimed process operated on a machine, a digital computer, but was still held to be ineligible subject matter.[9] However, in Benson, the limitations tying the process to a computer were not actually limiting because the fundamental principle at issue, a particular algorithm, had no utility other than operating on a digital computer. Benson, 409 U.S. at 71-72, 93 S.Ct. 253. Thus, the claim's tie to a digital computer did not reduce the pre-emptive footprint of the claim since all uses of the algorithm were still covered by the claim.

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[8] To the extent it may be argued that Flook did not explicitly follow the machine-or-transformation test first articulated in Benson, we note that the more recent decision in Diehr reaffirmed the machine-or-transformation test. See Diehr, 450 U.S. at 191-92, 101 S.Ct. 1048. Moreover, the Diehr Court explained that Flook "presented a similar situation" to Benson and considered it consistent with the holdings of Diehr and Benson. Diehr at 186-87, 189, 191-92, 101 S.Ct. 1048. We thus follow the Diehr Court's understanding of Flook.

B.

Applicants and several amici[10] have argued that the Supreme Court did not intend the machine-or-transformation test to be the sole test governing § 101 analyses. As already noted, however, the Court explicitly stated in Benson that "[t]ransformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines."[11] 409 U.S. at

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[9] We acknowledge that the Supreme Court in Benson stated that the claims at issue "were not limited ... to any particular apparatus or machinery." 409 U.S. at 64, 93 S.Ct. 253. However, the Court immediately thereafter stated: "[The claims] purported to cover any use of the claimed method in a general-purpose digital computer of any type." Id. And, as discussed herein, the Court relied for its holding on its understanding that the claimed process pre-empted all uses of the recited algorithm because its only possible use was on a digital computer. Id. at 71-72, 93 S.Ct. 253. The Diehr Court, in discussing Benson, relied only on this latter understanding of the Benson claims. See Diehr, 450 U.S. at 185-87, 101 S.Ct. 1048. We must do the same.

[10] See, e.g., Br. of Amicus Curiae Am. Intellectual Prop. Law Ass'n at 17-21; Br. of Amicus Curiae Regulatory Datacorp, Inc. at 10-15.

[11] We believe that the Supreme Court spoke of the machine-or-transformation test as the "clue" to patent-eligibility because

70, 93 S.Ct. 253 (emphasis added). And the Court itself later noted in Flook that at least so far it had "only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a 'different state or thing.'" 437 U.S. at 589 n. 9, 98 S.Ct. 2522. Finally, the Court in Diehr once again applied the machine-or-transformation test in its most recent decision regarding the patentability of processes under § 101. 450 U.S. at 184, 101 S.Ct. 1048.

We recognize, however, that the Court was initially equivocal in first putting forward this test in Benson. As the Applicants and several amici point out, the Court there stated:

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing.' We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.

Benson, 409 U.S. at 71, 93 S.Ct. 253. In Flook, the Court took note that this statement had been made in Benson but merely stated: "As in Benson, we assume that a valid process patent may issue even if it does not meet [the machine-or-transformation test]." 437 U.S. at 589 n. 9, 98 S.Ct. 2522 (emphasis added). And this caveat was not repeated in Diehr

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the test is the tool used to determine whether a claim is drawn to a statutory "process"-the statute does not itself explicitly mention machine implementation or transformation. We do not consider the word "clue" to indicate that the machine-or-implementation test is optional or merely advisory. Rather, the Court described it as the clue, not merely "a" clue. See Benson, 409 U.S. at 70, 93 S.Ct. 253.

when the Court reaffirmed the machine-or-transformation test. See Diehr, 450 U.S. at 184, 101 S.Ct. 1048 (quoting Benson, 409 U.S. at 70, 93 S.Ct. 253) ("Transformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines."). Therefore, we believe our reliance on the Supreme Court's machine-or-transformation test as the applicable test for § 101 analyses of process claims is sound.

Nevertheless, we agree that future developments in technology and the sciences may present difficult challenges to the machine-or-transformation test, just as the widespread use of computers and the advent of the Internet has begun to challenge it in the past decade. Thus, we recognize that the Supreme Court may ultimately decide to alter or perhaps even set aside this test to accommodate emerging technologies. And we certainly do not rule out the possibility that this court may in the future refine or augment the test or how it is applied. At present, however, and certainly for the present case, we see no need for such a departure and reaffirm that the machine-or-transformation test, properly applied, is the governing test for determining patent eligibility of a process under § 101.[12]

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[12] The Diehr Court stated: "[W]hen a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (e.g., transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101." 450 U.S at 192, 101 S.Ct. 1048 (emphases added). When read together with Benson and Flook, on which the Diehr Court firmly relied, we believe this statement is consistent with the machine-or-transformation test. But as we noted in AT & T,

C.

As a corollary, the Diehr Court also held that mere field-of-use limitations are generally insufficient to render an otherwise ineligible process claim patent-eligible. See 450 U.S. at 191-92, 101 S.Ct. 1048 (noting that ineligibility under § 101 "cannot be circumvented by attempting to limit the use of the formula to a particular technological environment"). We recognize that tension may be seen between this consideration and the Court's overall goal of pre-venting the wholesale pre-emption of fundamental principles. Why not permit patentees to avoid overbroad pre-emption by limiting claim scope to particular fields of use? This tension is resolved, however, by recalling the purpose behind the Supreme Court's discussion of pre-emption, namely that pre-emption is merely an indication that a claim seeks to cover a fundamental principle itself rather than only a specific application of that principle. See id. at 187, 101 S.Ct. 1048; Benson, 409 U.S. at 71-72, 93 S.Ct. 253. Pre-emption of all uses of a fundamental principle in all fields and pre-emption of all uses of the principle in only one field both indicate that the claim is not limited to a particular application of the principle. See Diehr, 450 U.S. at 193 n. 14, 101 S.Ct. 1048 ("A mathematical formula in the abstract is nonstatutory subject matter regardless of whether the patent is intended to cover all uses of the formula or only limited uses.") (emphasis added). In contrast, a claim that is tied to a particular machine or brings about a particular transformation of a particular article does not pre-

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language such as the use of "e.g." may indicate the Supreme Court's recognition that the machine-or-transformation test might require modification in the future. See AT & T, 172 F.3d at 1358-59.

empt all uses of a fundamental principle in any field but rather is limited to a particular use, a specific application. Therefore, it is not drawn to the principle in the abstract.

The Diehr Court also reaffirmed a second corollary to the machine-or-transformation test by stating that "insignificant postsolution activity will not transform an unpatentable principle into a patentable process." Id. at 191-92, 101 S.Ct. 1048; see also Flook, 437 U.S. at 590, 98 S.Ct. 2522 ("The notion that post-solution activity, no matter how conventional or obvious in itself, can transform an unpatentable principle into a patentable process exalts form over substance."). The Court in Flook reasoned:

> A competent draftsman could attach some form of post-solution activity to almost any mathematical formula; the Pythagorean theorem would not have been patentable, or partially patentable, because a patent application contained a final step indicating that the formula, when solved, could be usefully applied to existing surveying techniques.

437 U.S. at 590, 98 S.Ct. 2522.[13] Therefore, even if a claim recites a specific machine or a particular transformation of a specific article, the recited machine or transformation must not constitute mere "insignificant postsolution activity."[14]

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[13] The example of the Pythagorean theorem applied to surveying techniques could also be considered an example of a mere field-of-use limitation.

[14] Although the Court spoke of "postsolution" activity, we have recognized that the Court's reasoning is equally applicable to any insignificant extra-solution activity regardless of where and when it appears in the claimed process. See In re Schrader, 22

D.

We discern two other important aspects of the Supreme Court's § 101 jurisprudence. First, the Court has held that whether a claimed process is novel or non-obvious is irrelevant to the § 101 analysis. Diehr, 450 U.S. at 188-91, 101 S.Ct. 1048. Rather, such considerations are governed by 35 U.S.C. § 102 (novelty) and § 103 (non-obviousness). Diehr, 450 U.S. at 188-91, 101 S.Ct. 1048. Although § 101 refers to "new and useful" processes, it is overall "a general statement of the type of subject matter that is eligible for patent protection 'subject to the conditions and requirements of this title.'" Diehr, 450 U.S. at 189, 101 S.Ct. 1048 (quoting § 101). As the legislative history of § 101 indicates, Congress did not intend the "new and useful" language of § 101 to constitute an independent requirement of novelty or non-obviousness distinct from the more specific and detailed requirements of §§ 102 and 103, respectively. Diehr, 450 U.S. at 190-91, 101 S.Ct. 1048.[15] So here, it is irrelevant to the § 101 analysis whether Applicants' claimed process is novel or non-obvious.

Second, the Court has made clear that it is inappropriate to determine the patent-eligibility of a claim as a whole based on whether selected limita-

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F.3d 290, 294 (Fed.Cir.1994) (holding a simple recordation step in the middle of the claimed process incapable of imparting patent-eligibility under § 101); In re Grams, 888 F.2d 835, 839-40 (Fed.Cir.1989) (holding a pre-solution step of gathering data incapable of imparting patent-eligibility under § 101).

[15] By the same token, considerations of adequate written description, enablement, best mode, etc., are also irrelevant to the § 101 analysis because they, too, are governed by other provisions of the Patent Act. Section 101 does, however, allow for patents only on useful inventions. Brenner v. Manson, 383 U.S. 519, 532-35, 86 S.Ct. 1033, 16 L.Ed.2d 69 (1966).

tions constitute patent-eligible subject matter. Flook, 437 U.S. at 594, 98 S.Ct. 2522 ("Our approach to respondent's application is, however, not at all inconsistent with the view that a patent claim must be considered as a whole."); Diehr, 450 U.S. at 188, 101 S.Ct. 1048 ("It is inappropriate to dissect the claims into old and new elements and then to ignore the presence of the old elements in the analysis."). After all, even though a fundamental principle itself is not patent-eligible, processes incorporating a fundamental principle may be patent-eligible. Thus, it is irrelevant that any individual step or limitation of such processes by itself would be unpatentable under § 101. See In re Alappat, 33 F.3d 1526, 1543-44 (Fed.Cir.1994) (en banc) (citing Diehr, 450 U.S. at 187, 101 S.Ct. 1048).

III.

In the years following the Supreme Court's decisions in Benson, Flook, and Diehr, our predecessor court and this court have reviewed numerous cases presenting a wide variety of process claims, some in technology areas unimaginable when those seminal Supreme Court cases were heard.[16] Looking to these precedents, we find a wealth of detailed guidance and helpful examples on how to determine the patent-eligibility of process claims.

A.

Before we turn to our precedents, however, we first address the issue of whether several other purported articulations of § 101 tests are valid and useful. The first of these is known as the Freeman-Walter-Abele test after the three decisions of our predecessor court that formulated and then refined the test: In re Freeman, 573 F.2d 1237 (CCPA 1978); In re Walter, 618 F.2d 758 (CCPA 1980); and In re Abele, 684 F.2d 902 (CCPA 1982). This test, in its final form, had two steps: (1) determining whether the claim recites an "algorithm" within the meaning of Benson, then (2) determining whether that algorithm is "applied in any manner to physical elements or process steps." Abele, 684 F.2d at 905-07.

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[16] We note that the PTO, too, has been active in analyzing § 101 law. See, e.g., Ex parte Lundgren, 76 U.S.P.Q.2d 1385 (B.P.A.I.2004); Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility, Off. Gaz. Pat. & Trademark Office, Nov. 22, 2005.

Some may question the continued viability of this test, arguing that it appears to conflict with the Supreme Court's proscription against dissecting a claim and evaluating patent-eligibility on the basis of individual limitations. See Flook, 437 U.S. at 594, 98 S.Ct. 2522 (requiring analysis of claim as a whole in § 101 analysis); see also AT & T, 172 F.3d at 1359; State St., 149 F.3d at 1374. In light of the present opinion, we conclude that the Freeman-Walter-Abele test is inadequate. Indeed, we have already recognized that a claim failing that test may nonetheless be patent-eligible. See In re Grams, 888 F.2d 835, 838-39 (Fed.Cir.1989). Rather, the machine-or-transformation test is the applicable test for patent-eligible subject matter.[17]

The second articulation we now revisit is the "useful, concrete, and tangible result" language associated with State Street, although first set forth in

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[17] Therefore, in Abele, Meyer, Grams, Arrhythmia Research Technology, Inc. v. Corazonix Corp., 958 F.2d 1053 (Fed.Cir. 1992), and other decisions, those portions relying solely on the Freeman-Walter-Abele test should no longer be relied on.

Alappat. State St., 149 F.3d at 1373 ("Today, we hold that the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a [patent-eligible invention] because it produces 'a useful, concrete and tangible result'....");[18] Alappat, 33 F.3d at 1544 ("This is not a disembodied mathematical concept which may be characterized as an 'abstract idea,' but rather a specific machine to produce a useful, concrete, and tangible result."); see also AT & T, 172 F.3d at 1357 ("Because the claimed process applies the Boolean principle to produce a useful, concrete, tangible result without pre-empting other uses of the mathematical principle, on its face the claimed process comfortably falls within the scope of § 101."). The basis for this language in State Street and Alappat was that the Supreme Court has explained that "certain types of mathematical subject matter, standing alone, represent nothing more than abstract ideas until reduced to some type of practical application." Alappat, 33 F.3d at 1543; see also State St., 149 F.3d at 1373. To be sure, a process tied to a particular machine, or transforming or reducing a particular article into a different state or thing, will generally produce a "concrete" and "tangible" result as those terms were used in our prior decisions. But while looking for "a useful, concrete and tangible result" may in many instances provide useful indications of whether a claim is drawn to a fundamental principle or a practical application of such a principle, that inquiry is insufficient to determine whether a claim is patent-eligible under § 101. And it was certainly never intended to supplant the Supreme Court's test. Therefore, we also conclude that the "useful, concrete and tangible result" inquiry is inadequate and reaffirm that the machine-or-transformation test outlined by the Supreme Court is the proper test to apply.[19]

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[18] In State Street, as is often forgotten, we addressed a claim drawn not to a process but to a machine. 149 F.3d at 1371-72 (holding that the means-plus-function elements of the claims on appeal all corresponded to supporting structures disclosed in the written description).

We next turn to the so-called "technological arts test" that some amici[20] urge us to adopt. We perceive that the contours of such a test, however, would be unclear because the meanings of the terms "technological arts" and "technology" are both ambiguous and ever-changing.[21] And no such test has ever been explicitly adopted by the Supreme Court, this court, or our predecessor court, as the Board correctly observed here. Therefore, we decline to do so and continue to rely on the machine-or-transformation test as articulated by the Supreme Court.

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[19] As a result, those portions of our opinions in State Street and AT & T relying solely on a "useful, concrete and tangible result" analysis should no longer be relied on.

[20] See, e.g., Br. of Amicus Curiae Consumers Union et al. at 6-10; Br. of Amicus Curiae William Mitchell Coll. of Law Intellectual Prop.Inst. at 14-15.

[21] Compare Appellee's Br. at 24-28 (arguing that patents should be reserved only for "technological" inventions that "involve[ ] the application of science or mathematics," thereby excluding "non-technological inventions" such as "activities whose ability to achieve their claimed goals depended solely on contract formation"), with Br. of Amicus Curiae Regulatory Datacorp, Inc. at 19-24 (arguing that "innovations in business, finance, and other applied economic fields plainly qualify as 'technological'" since "a fair definition of technological is 'characterized by the practical application of knowledge in a particular field'" and because modern economics has "a closer affinity to physics and engineering than to liberal arts like English literature").

We further reject calls for categorical exclusions beyond those for fundamental principles already identified by the Supreme Court.[22] We rejected just such an exclusion in State Street, noting that the so-called "business method exception" was unlawful and that business method claims (and indeed all process claims) are "subject to the same legal requirements for patentability as applied to any other process or method." 149 F.3d at 1375-76. We reaffirm this conclusion.[23]

Lastly, we address a possible misunderstanding of our decision in Comiskey. Some may suggest that Comiskey implicitly applied a new § 101 test that bars any claim reciting a mental process that lacks significant "physical steps." We did not so hold, nor did we announce any new test at all in Comiskey. Rather, we simply recognized that the Supreme Court has held that mental processes, like fundamental principles, are excluded by § 101 because "'[p]henomena of nature, though just discovered, mental processes, and abstract intellectual concepts ... are the basic tools of scientific and technological work.'" Comiskey, 499 F.3d at 1377 (quoting Benson, 409 U.S. at 67, 93 S.Ct. 253) (emphasis added). And we actually applied the machine-or-transformation test to determine whether various claims at issue were drawn to patent-eligible subject matter.[24] Id. at 1379 ("Comiskey has conceded that these claims do not require a machine, and these claims evidently do not describe a process of manufacture or a process for the alteration of a composition of matter."). Because those claims failed the machine-or-transformation test, we held that they were drawn solely to a fundamental principle, the mental process of arbitrating a dispute, and were thus not patent-eligible under § 101. Id.

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[22] See, e.g., Br. of Amicus Curiae Fin. Servs. Indus. at 20 ("[E]xtending patent protection to pure methods of doing business ... is contrary to the constitutional and statutory basis for granting patent monopolies....").

[23] Therefore, although invited to do so by several amici, we decline to adopt a broad exclusion over software or any other such category of subject matter beyond the exclusion of claims drawn to fundamental principles set forth by the Supreme Court. See, e.g., Br. of Amicus Curiae End Software Patents; Br. of Amicus Curiae Red Hat, Inc. at 4-7. We also note that the process claim at issue in this appeal is not, in any event, a software claim. Thus, the facts here would be largely unhelpful in illuminating the distinctions between those software claims that are patent-eligible and those that are not.

Further, not only did we not rely on a "physical steps" test in Comiskey, but we have criticized such an approach to the § 101 analysis in earlier decisions. In AT & T, we rejected a "physical limitations" test and noted that "the mere fact that a claimed invention involves inputting numbers, calculating numbers, outputting numbers, and storing numbers, in and of itself, would not render it nonstatutory subject matter." 172 F.3d at 1359 (quoting State St., 149 F.3d at 1374). The same reasoning applies when the claim at issue recites fundamental principles other than mathematical algorithms. Thus, the proper inquiry under § 101 is not whether the process claim recites sufficient "physical steps," but rather whether the claim meets the machine-or-transformation test.[25] As a result, even a claim that recites "physical steps" but neither recites a particular machine or apparatus, nor transforms any article into a different state or thing, is not drawn to patent-eligible subject matter. Conversely, a claim that purportedly lacks any "physical steps" but is still tied to a machine or achieves an eligible transformation passes muster under § 101.[26]

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[24] Our statement in Comiskey that "a claim reciting an algorithm or abstract idea can state statutory subject matter only if, as employed in the process, it is embodied in, operates on, transforms, or otherwise involves another class of statutory subject matter, i.e., a machine, manufacture, or composition of matter," 499 F.3d at 1376, was simply a summarization of the Supreme Court's machine-or-transformation test and should not be understood as altering that test.

B.

With these preliminary issues resolved, we now turn to how our case law elaborates on the § 101 analysis set forth by the Supreme Court. To the extent that some of the reasoning in these decisions relied on considerations or tests, such as "useful, concrete and tangible result," that are no longer valid as explained above, those aspects of the decisions should no longer be relied on. Thus, we reexamine the facts of certain cases under the correct test to glean greater guidance as to how to perform the § 101 analysis using the machine-or-transformation test.

The machine-or-transformation test is a two-branched inquiry; an applicant may show that a process claim satisfies § 101 either by showing that his claim is tied to a particular machine, or by showing that his claim transforms an article. See Benson, 409 U.S. at 70, 93 S.Ct. 253. Certain con-siderations are applicable to analysis under either branch. First, as illustrated by Benson and discussed below, the use of a specific machine or transformation of an article must impose meaningful limits on the claim's scope to impart patent-eligibility. See Benson, 409 U.S. at 71-72, 93 S.Ct. 253. Second, the involvement of the machine or transformation in the claimed process must not merely be insignificant extra-solution activity. See Flook, 437 U.S. at 590, 98 S.Ct. 2522.

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[25] Thus, it is simply inapposite to the § 101 analysis whether process steps performed by software on a computer are sufficiently "physical."

[26] Of course, a claimed process wherein all of the process steps may be performed entirely in the human mind is obviously not tied to any machine and does not transform any article into a different state or thing. As a result, it would not be patent-eligible under § 101.

As to machine implementation, Applicants themselves admit that the language of claim 1 does not limit any process step to any specific machine or apparatus. See Appellants' Br. at 11. As a result, issues specific to the machine implementation part of the test are not before us today. We leave to future cases the elaboration of the precise contours of machine implementation, as well as the answers to particular questions, such as whether or when recitation of a computer suffices to tie a process claim to a particular machine.

We will, however, consider some of our past cases to gain insight into the transformation part of the test. A claimed process is patent-eligible if it transforms an article into a different state or thing. This transformation must be central to the purpose of the claimed process. But the main aspect of the transformation test that requires clarification here is what sorts of things constitute "articles" such that their transformation is sufficient to impart patent-eligibility under § 101. It is virtually self-evident that a process for a chemical or physical transformation of physical objects or substances is patent-eligible subject matter. As the Supreme Court stated in Benson:

> [T]he arts of tanning, dyeing, making waterproof cloth, vulcanizing India rubber, smelting ores ... are instances, however, where the use of chemical sub-stances or physical acts, such as temperature control, changes articles or materials. The chemical process or the physical acts which transform the raw material are, however, sufficiently definite to confine the patent monopoly within rather definite bounds.

409 U.S. at 70, 93 S.Ct. 253 (quoting Corning v. Burden, 56 U.S. (15 How.) 252, 267-68, 14 L.Ed. 683 (1854)); see also Diehr, 450 U.S. at 184, 101 S.Ct. 1048 (process of curing rubber); Tilghman, 102 U.S. at 729 (process of reducing fats into constituent acids and glycerine).

The raw materials of many information-age processes, however, are electronic signals and electronically-manipulated data. And some so-called business methods, such as that claimed in the present case, involve the manipulation of even more abstract constructs such as legal obligations, organizational relationships, and business risks. Which, if any, of these processes qualify as a transformation or reduction of an article into a different state or thing constituting patent-eligible subject matter?

Our case law has taken a measured approach to this question, and we see no reason here to expand the boundaries of what constitutes patent-eligible transformations of articles.

Our predecessor court's mixed result in Abele illustrates this point. There, we held unpatentable a broad independent claim reciting a process of graphically displaying variances of data from average values. Abele, 684 F.2d at 909. That claim did not specify any particular type or nature of data; nor did it specify how or from where the data was obtained or what the data represented. Id.; see also In re Meyer, 688 F.2d 789, 792-93 (CCPA 1982) (process claim involving undefined "complex system" and indeterminate "factors" drawn from unspecified "testing" not patent-eligible). In contrast, we held one of Abele's dependent claims to be drawn to patent-eligible subject matter where it specified that "said data is X-ray attenuation data produced in a two dimensional field by a computed tomography scanner." Abele, 684 F.2d at 908-09. This data clearly represented physical and tangible objects, namely the structure of bones, organs, and other body tissues. Thus, the transformation of that raw data into a particular visual depiction of a physical object on a display was sufficient to render that more narrowly-claimed process patent-eligible.

We further note for clarity that the electronic transformation of the data itself into a visual depiction in Abele was sufficient; the claim was not required to involve any transformation of the underlying physical object that the data represented. We believe this is faithful to the concern the Supreme Court articulated as the basis for the machine-or-transformation test, namely the prevention of pre-emption of fundamental principles. So long as the claimed process is limited to a practical application of a fundamental principle to transform specific data, and the claim is limited to a visual depiction that represents specific physical objects or substances, there is no danger that the scope of the claim would wholly pre-empt all uses of the principle.

This court and our predecessor court have frequently stated that adding a data-gathering step to an algorithm is insufficient to convert that algorithm into a patent-eligible process. E.g., Grams, 888 F.2d at 840 (step of "deriv[ing] data for the algorithm will not render the claim statutory"); Meyer, 688 F.2d at 794 ("[data-gathering] step[s] cannot make an otherwise nonstatutory claim statutory"). For example, in Grams we held unpatentable a process of performing a clinical test and, based on the data from that test, determining if an abnormality existed and possible causes of any abnormality. 888 F.2d at 837, 841. We rejected the claim because it was merely an algorithm combined with a data-gathering step. Id. at 839-41. We note that, at least in most cases, gathering data would not constitute a transformation of any article. A requirement simply that data inputs be gathered-without specifying how-is a meaningless limit on a claim to an algorithm because every algorithm inherently requires the gathering of data inputs. Grams, 888 F.2d at 839-40. Further, the inherent step of gathering data can also fairly be characterized as insignificant extra-solution activity. See Flook, 437 U.S. at 590, 98 S.Ct. 2522.

Similarly, In re Schrader presented claims directed to a method of conducting an auction of multiple items in which the winning bids were selected in a manner that maximized the total price of all the items (rather than to the highest individual bid for each item separately). 22 F.3d 290, 291 (Fed.Cir. 1994). We held the claims to be drawn to unpatentable subject matter, namely a mathematical optimization algorithm. Id. at 293-94. No specific machine or apparatus was recited. The claimed method did require a step of recording the bids on each item, though no particular manner of recording (e.g., on paper, on a computer) was specified. Id. But, relying on Flook, we held that this step constituted insignificant extra-solution activity. Id. at 294.

IV.

We now turn to the facts of this case. As outlined above, the operative question before this court is whether Applicants' claim 1 satisfies the transformation branch of the machine-or-transformation test.

We hold that the Applicants' process as claimed does not transform any article to a different state or thing. Purported transformations or manipulations simply of public or private legal obligations or relationships, business risks, or other such abstractions cannot meet the test because they are not physical objects or substances, and they are not representative of physical objects or substances. Applicants' process at most incorporates only such ineligible transformations. See Appellants' Br. at 11 ("[The claimed process] transforms the relationships be-tween the commodity provider, the consumers and market participants ....") As discussed earlier, the process as claimed encompasses the exchange of only options, which are simply legal rights to purchase some commodity at a given price in a given time period. See J.A. at 86-87. The claim only refers to "transactions" involving the exchange of these legal rights at a "fixed rate corresponding to a risk position." See '892 application cl.1. Thus, claim 1 does not involve the transformation of any physical object or substance, or an electronic signal representative of any physical object or substance. Given its admitted failure to meet the machine implementation part of the test as well, the claim entirely fails the machine-or-transformation test and is not drawn to patent-eligible subject matter.

Applicants' arguments are unavailing because they rely on incorrect or insufficient considerations and do not address their claim's failure to meet the requirements of the Supreme Court's machine-or-trans-formation test. First, they argue that claim 1 pro-duces "useful, concrete and tangible results." But as already discussed, this is insufficient to establish patent-eligibility under § 101. Applicants also argue that their claimed process does not comprise only "steps that are totally or substantially practiced in the mind but clearly require physical activity which have [sic] a tangible result." Appellants' Br. at 9. But as previously discussed, the correct analysis is whether the claim meets the machine-or-transformation test, not whether it recites "physical steps." Even if it is true that Applicant's claim "can only be practiced by a series of physical acts" as they argue, see id. at 9, its clear failure to satisfy the machine-or-transformation test is fatal. Thus, while we agree with Applicants that the only limit to patent-eligibility imposed by Congress is that the invention fall within one of the four categories enumerated in § 101, we must apply the Supreme Court's test to determine whether a claim to a process is drawn to a statutory "process" within the meaning of § 101. Applied here, Applicants' claim fails that test so it is not drawn to a "process" under § 101 as that term has been interpreted.

On the other hand, while we agree with the PTO that the machine-or-transformation test is the correct test to apply in determining whether a process claim is patent-eligible under § 101, we do not agree, as discussed earlier, that this amounts to a "technological arts" test. See Appellee's Br. at 24-28. Neither the PTO nor the courts may pay short shrift to the machine-or-transformation test by using purported equivalents or shortcuts such as a "technological arts" requirement. Rather, the machine-or-transformation test is the only applicable test and must be applied, in light of the guidance provided by the Supreme Court and this court, when evaluating the patent-eligibility of process claims. When we do so here, however, we must conclude, as the PTO did, that Applicants' claim fails the test.

Applicants' claim is similar to the claims we held unpatentable under § 101 in Comiskey. There, the applicant claimed a process for mandatory arbitration of disputes regarding unilateral documents and bilateral "contractual" documents in which arbitration was required by the language of the document, a dispute regarding the document was arbitrated, and a binding decision resulted from the arbitration. Comiskey, 499 F.3d at 1368-69. We held the broadest process claims unpatentable under § 101 because "these claims do not require a machine, and these claims evidently do not describe a process of manufacture or a process for the alteration of a composition of matter." Id. at 1379. We concluded that the claims were instead drawn to the "mental process" of arbitrating disputes, and that claims to such an "application of [only] human intelligence to the solution of practical problems" is no more than a claim to a fundamental principle. Id. at 1377-79 (quoting Benson, 409 U.S. at 67, 93 S.Ct. 253 ("[M]ental processes, and abstract intellectual con-cepts are not patentable, as they are the basic tools of scientific and technological work.")).

Just as the Comiskey claims as a whole were directed to the mental process of arbitrating a dispute to decide its resolution, the claimed process here as a whole is directed to the mental and mathematical process of identifying transactions that would hedge risk. The fact that the claim requires the identified transactions actually to be made does no more to alter the character of the claim as a whole than the fact that the claims in Comiskey required a decision to actually be rendered in the arbitration-i.e., in neither case do the claims require the use of any particular machine or achieve any eligible transformation.

We have in fact consistently rejected claims like those in the present appeal and in Comiskey. For example, in Meyer, the applicant sought to patent a method of diagnosing the location of a malfunction in an unspecified multi-component system that assigned a numerical value, a "factor," to each component and updated that value based on diagnostic tests of each component. 688 F.2d at 792-93. The locations of any malfunctions could thus be deduced from reviewing these "factors." The diagnostic tests were not identified, and the "factors" were not tied to any particular measurement; indeed they could be arbitrary. Id. at 790. We held that the claim was effectively drawn only to "a mathematical algorithm representing a mental process," and we affirmed the PTO's rejection on § 101 grounds. Id. at 796. No machine was recited in the claim, and the only potential "transformation" was of the disembodied "factors" from one number to another. Thus, the claim effectively sought to preempt the fundamental mental process of diagnosing the location of a malfunction in a system by noticing that the condition of a particular component had changed. And as discussed earlier, a similar claim was rejected in Grams.[27] See 888 F.2d at 839-40 (rejecting claim to process of diagnosing "abnormal condition" in person by identifying and noticing discrepancies in results of unspecified clinical tests of different parts of body).

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[27] We note that several Justices of the Supreme Court, in a dissent to a dismissal of a writ of certiorari, expressed their view that a similar claim in Laboratory Corp. of America Hold-

Similarly to the situations in Meyer and Grams, Applicants here seek to claim a non-transformative process that encompasses a purely mental process of performing requisite mathematical calculations without the aid of a computer or any other device, mentally identifying those transactions that the calculations have revealed would hedge each other's risks, and performing the post-solution step of consummating those transactions. Therefore, claim 1 would effectively pre-empt any application of the fundamental concept of hedging and mathematical calculations inherent in hedging (not even limited to any particular mathematical formula). And while Applicants argue that the scope of this pre-emption is limited to hedging as applied in the area of consumable commodities, the Supreme Court's reasoning has made clear that effective pre-emption of all applications of hedging even just within the area of con-sumable commodities is impermissible. See Diehr, 450 U.S. at 191-92, 101 S.Ct. 1048 (holding that field-of-use limitations are insufficient to impart patent-eligibility to otherwise unpatentable claims drawn to fundamental principles). Moreover, while the claimed process contains physical steps (initiating, identify-

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ings v. Metabolite Laboratories, Inc. was drawn to unpatentable subject matter. 548 U.S. 124, 126 S.Ct. 2921, 2927-28, 165 L.Ed.2d 399 (2006) (Breyer, J., dissenting; joined by Stevens, J., and Souter, J.). There, the claimed process only comprised the steps of: (1) "assaying a body fluid for an elevated level of total homocysteine," and (2) "correlating an elevated level of total homocysteine in said body fluid with a deficiency of cobalamin or folate." Id. at 2924.

ing), it does not involve transforming an article into a different state or thing. Therefore, Applicants' claim is not drawn to patent-eligible subject matter under § 101.

CONCLUSION

Because the applicable test to determine whether a claim is drawn to a patent-eligible process under § 101 is the machine-or-transformation test set forth by the Supreme Court and clarified herein, and Applicants' claim here plainly fails that test, the decision of the Board is

AFFIRMED.

DYK, Circuit Judge, with whom LINN, Circuit Judge, joins, concurring.

While I fully join the majority opinion, I write separately to respond to the claim in the two dissents that the majority's opinion is not grounded in the statute, but rather "usurps the legislative role."[1] In fact, the unpatentability of processes not involving manufactures, machines, or compositions of matter has been firmly embedded in the statute since the time of the Patent Act of 1793, ch. 11, 1 Stat. 318 (1793). It is our dissenting colleagues who would legislate by expanding patentable subject matter far beyond what is allowed by the statute.

I

Section 101 now provides:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. § 101 (emphases added).

The current version of § 101 can be traced back to the Patent Act of 1793. In relevant part, the 1793 Act stated that a patent may be granted to any person or persons who:

> shall allege that he or they have invented any new and useful art, machine, manufacture or composition of matter, or any new and useful improvement on any art, machine, manufacture or composition of matter....

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[1] The dissents fault the majority for "ventur[ing] away from the statute," Rader, J., dissenting op. at 1013, and "usurp[ing] the legislative role," Newman, J., dissenting op. at 997.

1 Stat. 318, 319 § 1 (1793) (emphases added). The criteria for patentability established by the 1793 Act remained essentially unchanged until 1952, when Congress amended § 101 by replacing the word "art" with "process" and providing in § 100(b) a definition of the term "process." The Supreme Court has made clear that this change did not alter the substantive understanding of the statute; it did not broaden the scope of patentable subject matter.[2] Thus, our interpretation of § 101 must begin with a consideration of what the drafters of the early patent statutes understood the patentability standard to require in 1793. See Diehr, 450 U.S. at 182-83, 101 S.Ct. 1048 (looking to the 1793 Act).

A

The patentability criteria of the 1793 Act were to a significant extent the same in the 1790 Act.[3] The 1790 "statute was largely based on and incorporated" features of the English system and reveals a sophisticated knowledge of the English patent law and practice.[4] This is reflected in Senate committee re-port[5] for the bill that became the 1790 Act, which expressly noted the drafters' reliance on the English practice:

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[2] See Diamond v. Diehr, 450 U.S. 175, 182, 101 S.Ct. 1048, 67 L.Ed.2d 155 (1981) ("[A] process has historically enjoyed patent protection because it was considered a form of 'art' as that term was used in the 1793 Act."); Diamond v. Chakrabarty, 447 U.S. 303, 309, 100 S.Ct. 2204, 65 L.Ed.2d 144 (1980). Rather, the 1952 Act simply affirmed the prior judicial understanding, as set forth in Corning v. Burden, 56 U.S. (15 How.) 252, 14 L.Ed. 683 (1853), that Congress in 1793 had provided for the patentability of a "process" under the term "art." Diehr, 450 U.S. at 182, 101 S.Ct. 1048.

[3] In relevant part, the 1790 Act permitted patents upon "any useful art, manufacture, engine, machine, or device, or any improvement therein not before known or used." Ch. 11, § 1, 1 Stat. 109, 110 (1790).

> The Bill depending before the House of Representatives for the Promotion of useful Arts is framed according to the Course of Practice in the English Patent Office except in two Instances-

22 J. Pat. Off. Soc'y at 363 (emphasis added).[6] Likewise, the legislative history of the 1793 Patent Act reflects the same keen understanding of English patent practice. During a debate in the House over the

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[4] Edward C. Walterscheid, To Promote the Progress of Useful Arts: American Patent Law & Administration, 1798-1836 109 (1998) (hereinafter To Promote the Progress); see also Edward C. Walterscheid, The Early Evolution of the United States Patent Law: Antecedents (Part 1), 76 J. Pat. & Trademark Off. Soc'y 697, 698 (1994) ("[T]he English common law relating to patents was what was best known in the infant United States.").

[5] Senate Committee Report Accompanying Proposed Amendments to H.R. 41, reprinted in Proceedings in Congress During the Years 1789 & 1790 Relating to the First Patent & Copyright Laws, 22 J. Pat. Off. Soc'y 352, 363 (1940).

[6] Neither of those two instances related to patentable subject matter or was adopted in the enacted statute. The first proposed departure from the English practice was a novelty provision protecting the inventor against those who derived their knowledge of the invention from the true inventor; the second was in a requirement that patentees make a "Public Advertisement" of their invention. Such a requirement was thought necessary "in so extensive a Country as the United States." Senate Report, reprinted in 22 J. Pat. Off. Soc'y at 363-64.

The American statute ultimately differed in some other respects. For example, Congress rejected the English rule that the invention need only be novel in England. The American statute required novelty against the whole world and did not permit "patents of importation." See To Promote the Progress, supra n. 4 at 95-97, 137-38.

creation of a Patent Office, for example, the Representative who introduced the bill noted that its principles were "an imitation of the Patent System of Great Britain." 3 Annals of Congress 855 (1793).[7]

Later, Justice Story, writing for the Supreme Court, recognized the profound influence of the English practice on these early patent laws, which in many respects codified the common law:

> It is obvious to the careful inquirer, that many of the provisions of our patent act are derived from the principles and practice which have prevailed in the construction of that of England .... The language of [the patent clause of the Statute of Monopolies] is not, as we shall presently see, identical with ours; but the construction of it adopted by the English courts, and the principles and practice which have long regulated the grants of their patents, as they must have been known and are tacitly referred to in some of the provisions of our own statute, afford materials to illustrate it.

Pennock v. Dialogue, 27 U.S. 1, 18, 2 Pet. 1, 7 L.Ed. 327 (1829) (emphases added); see also Graham v. John Deere Co., 383 U.S. 1, 5, 86 S.Ct. 684, 15

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[7] Even the opposing view-urging departure from the English practice in particular respects-recognized that the English practice provided considerable guidance. See 3 Annals of Congress at 855-56 ("[Great Britain] had afforded, it was true, much experience on the subject; but regulations adopted there would not exactly comport in all respects either with the situation of this country, or with the rights of the citizen here. The minds of some members had taken a wrong direction, he conceived, from the view in which they had taken up the subject under its analogy with the doctrine of patents in England."); see also To Promote the Progress, supra n. 4 at 216-17.

L.Ed.2d 545 (1966) (noting that first patent statute was written against the "backdrop" of English monopoly practices); Sears, Roebuck & Co. v. Stiffel Co., 376 U.S. 225, 230 n. 6, 84 S.Ct. 784, 11 L.Ed.2d 661 (1964) ("Much American patent law derives from English patent law.").

While Congress departed from the English practice in certain limited respects, in many respects Congress simply adopted the English practice without change. Both the 1790 and the 1793 Acts, for example, adopted the same 14-year patent term as in England. Both also required inventors to file a written specification-a requirement recognized by the English common law courts in the mid-eighteenth century.[8] In addition, as discussed below, the categories of patentable subject matter closely tracked the English approach, and in certain respects reflected a deliberate choice between competing views prevalent in England at the time.

B

The English practice in 1793, imported into the American statutes, explicitly recognized a limit on patentable subject matter. As the Supreme Court recounted in Graham v. John Deere, the English concern about limiting the allowable scope of patents arose from an aversion to the odious Crown practice of granting patents on particular types of businesses to court favorites. 383 U.S. 1, 5, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966); see also MacLeod, supra n. 8 at 15 ("But most offensive of all was the granting of monopoly powers in established industries, as a form of patronage, to courtiers whom the crown could not otherwise afford to reward."). Parliament responded to the Crown's abuses in 1623 by passing the Statute of Monopolies, prohibiting the Crown from granting these despised industry-type monopolies. Not all monopolies were prohibited, however: the Statute expressly exempted invention-type patent monopolies. Section 6 of the Statute exempted from its prohibitions "letters patent and grants of privilege for the term of fourteen years or under, hereafter to be made, of the sole working or making of any manner of new manufactures within this realm, to the true and first inventor and inventors of such manufactures...." 21 Jac. 1. c.3, s.6 (emphases added).

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[8] See Christine MacLeod, Inventing the Industrial Revolution: The English Patent System, 1660-1800 48-49 (2002); To Promote the Progress, supra n. 4 at 400, 404.

Each of the five categories of patentable subject matter recognized by the 1793 Patent Act—(1) "manufacture," (2) "machine," (3) "composition of matter," (4) "any new and useful improvement," and (5) "art"—was drawn either from the Statute of Monopolies and the common law refinement of its interpretation or resolved competing views being debated in England at the time. See To Promote the Progress, supra n. 4 at 239.

"Manufacture." At the most basic level, the 1793 Act, like the Statute of Monopolies, expressly provided for the patentability of "manufactures." This language was not accidental, but rather reflected a conscious adoption of that term as it was used in the English practice. Id. ("It is clear that the Congress sought to incorporate into the U.S. statutory scheme in 1793 at least as much of the common law interpretation of 'new manufactures' as was understood at the time.").

"Machine." Likewise, the category of "machines" in the 1793 Act had long been understood to be within the term "manufactures" as used in the English statute. See id.; see, e.g., Morris v. Bramson, 1 Carp. P.C. 30, 31 (K.B.1776) (sustaining a patent "for an engine or machine on which is fixed a set of working needles ... for the making of eyelet-holes") (emphasis added); MacLeod, supra n. 8 at 101 (noting, among numerous other early machine patents, seven patents on "machinery to raise coal and ores" before 1750).

"Composition of Matter." Although the 1790 statute did not explicitly include "compositions of matter," this was remedied in the 1793 statute. At the time, "compositions of matter" were already understood to be a type of manufacture patentable under the English statute. See To Promote the Progress, supra n. 4, at 224 n. 4. One example is found in Liardet v. Johnson, 1 Carp. P.C. 35 (K.B.1778), a case involving a patent on a "composition" of stucco (a composition of matter). Lord Mansfield's jury instructions noted that by the time of that trial he had decided "several cases" involving compositions: "But if ... the specification of the composition gives no proportions, there is an end of his patent.... I have determined, [in] several cases here, the specification must state, where there is a composition, the proportions...."[9]

"Any new and useful improvement." The reference to "any new and useful improvement" in the 1793 Act also adopted a consensus recently reached by the English courts. The common law courts had first ruled in Bircot's Case in the early seventeenth century that an improvement to an existing machine could not be the proper subject of a patent under the Statute of Monopolies. See Boulton v. Bull, 2 H. Bl. 463, 488 (C.P.1795). In 1776 that line of cases was overruled in Morris v. Bramson, because such a reading of the statute "would go to repeal almost every patent that was ever granted."[10]

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[9] Edward C. Walterscheid, The Nature of the Intellectual Property Clause: A Study in Historical Perspective 55 (2002) (quoting E. Wyndham Hulme, On the History of the Patent Laws in the Seventeenth and Eighteenth Centuries, 18 L.Q. Rev. 280, 285 (1902)).

"Art." As the Supreme Court has recognized, a process "was considered a form of 'art' as that term was used in the 1793 Act." Diehr, 450 U.S. at 182, 101 S.Ct. 1048 (citing Corning v. Burden, 56 U.S. at 267-268). The language of the Statute of Monopolies permitted patents on that which could be characterized as the "working or making of any manner of new manufactures within this realm." 21 Jac. 1. c.3, s.6. While this language plainly applied to tangible "new manufactures" (such as machines or compositions of matter), it also appeared to allow patenting of manufacturing processes as the "working or making of any manner of new manufactures." Thus, under the Statute of Monopolies patents could be had on the "working or making of any manner of new manufactures." Numerous method patents had issued by 1793, including James Watt's famous 1769 patent on a "[m]ethod of diminishing the consumption of fuel in [steam]-engines."[11] However, the English courts in the mid-eighteenth century had not yet resolved whether processes for manufacturing were themselves patentable under the statute, and as discussed below, the issue was being actively litigated in the English courts. In the 1793 Act Congress resolved this question by including the term "art" in the statute, adopting the practice of the English law officers and the views of those in England who favored process patents.

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[10] Morris, 1 Carp. P.C. at 34; see also Boulton, 2 H.Bl. at 489 ("Since [Morris v. Bramson], it has been the generally received opinion in Westminster Hall, that a patent for an addition is good.").

[11] Walterscheid, supra n. 9 at 355-56 (emphasis added); see also Boulton, 2 H. Bl. at 494-95 (1795) (noting that many method patents had issued).

II

The question remains as to what processes were considered to be patentable in England at the time of the 1793 Act. Examination of the relevant sources leads to the conclusion that the method Bilski seeks to claim would not have been considered patentable subject matter as a process under the English statute.

A

First, the language of the Statute of Monopolies-"working or making of any manner of new manufactures"—suggests that only processes that related to "manufactures" (including machines or compositions of matter) could be patented.

Second, the English patent practice before and contemporaneous with the 1793 Act confirms the notion that patentable subject matter was limited by the term "manufacture" in the Statute of Monopolies and required a relation to the other categories of patentable subject matter. The organization of human activity was not within its bounds. Rather, the patents registered in England under the Statute of Monopolies before 1793 were limited to articles of manufacture, machines for manufacturing, compositions of matter, and related processes. A complete list of such patents (with a few missing patents from the 17th century) was published in the mid-1800s by Bennet Woodcroft, the first head of the English Patent Office.[12] Representative examples of patented processes at the time include: "Method of making a more easy and perfect division in stocking frame-work manufactures," No. 1417 to John Webb (1784); "Making and preparing potashes and pearl-ashes of materials not before used for the purpose," No. 1223 to Richard Shannon (1779); "Making salt from sea-water or brine, by steam," No. 1006 to Daniel Scott (1772); "Milling raw hides and skins so as to be equally good for leather as if tanned," No. 893 to George Merchant (1768); "Making salt, and removing the corrosive nature of the same, by a separate preparation of the brine," No. 416 to George Campbell (1717); and "Making good and merchantable tough iron ... with one-fifth of the expense of charcoal as now used," No. 113 to Sir Phillibert Vernatt (1637).

Nothing in Woodcroft's list suggests that any of these hundreds of patents was on a method for organizing human activity, save for one aberrational patent discussed below. Rather, the established practice reflects the understanding that only processes related to manufacturing or "manufactures" were within the statute. The English cases before 1793 recognized that the practice followed in issuing patents was directly relevant to the construction of the statute. See, e.g., Morris, 1 Carp. P.C. at 34 (declining to read the statute in such a way that "would go to repeal almost every patent that was ever granted").

Third, nearly contemporaneous English cases following shortly after the 1793 Act lend further insight into what processes were thought to be patentable under the English practice at the time the statute was enacted. Although the issue of the validity of process patents had not conclusively been settled in the English common law before 1793, the question was brought before the courts in the landmark case of Boulton v. Bull, 2 H. Bl. 463, 465 (C.P.1795), which involved James Watt's patent for a "method of lessening the consumption of steam, and consequently fuel in [steam] engines."[13] In 1795, the court rendered a split decision, with two judges on each side. Boulton, 2 H. Bl. at 463 (1795). Those who viewed process patents as invalid, as did Justice Buller, urged that a method was merely an unpatentable principle: "A patent must be for some new production from [elements of nature], and not for the elements themselves." Id. at 485. He thought "it impossible to support a patent for a method only, without having carried it into effect and produced some new sub-stance." Id. at 486. Justice Health similarly found that the "new invented method for lessening the consumption of steam and fuel in [steam] engines" (i.e., the Watt patent), being neither "machinery" nor a "substance [ ] (such as medicine[]) formed by chemical and other processes," was not within the Statute of Monopolies. Id. at 481-82. In contrast, Lord Chief Justice Eyres, who believed processes had long been a valid subject of patents, urged that "two-thirds, I believe I might say three-fourths, of all patents granted since the statute [of Monopolies] passed, are for methods of operating and of manufacturing...." Id. at 494-95 (emphasis added). He agreed that "[u]ndoubtedly there can be no patent for a mere principle; but for a principle *so far embodied and connected with corporeal substances*... I think there may be a patent." *Id.* at 495 (emphasis added). Justice Rooke also noted that Watt's method was within the statute because it was connected with machinery: "What method can there be of saving steam or fuel in engines, but by some variation in the construction of them?" *Id.* at 478. The Justices who believed process patents were valid spoke in terms of manufacturing, machines, and compositions of matter, because the processes they believed fell within the statute were processes that "embodied and connected with corporeal substances." *Id.* at 495.

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[12] Bennet Woodcroft, Alphabetical Index of Patentees of Inventions, from March 2, 1617 (14 James I) to October 1, 1852 (16 Victoriae) (2d ed. 1857).

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[13] The Supreme Court has in several opinions noted Boulton v. Bull in connection with its consideration of English patent practice. See, e.g., Markman v. Westview Instruments, Inc., 517 U.S. 370, 381 n. 6, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996); Evans v. Eaton, 20 U.S. (7 Wheat.) 356, 388 n. 2-3, 5 L.Ed. 472 (1822).

In 1799, on appeal from another case involving the same Watt patent, the validity of such process patents were upheld. *Hornblower v. Boulton* (K.B.1799), 8 T.R. 95. There, Chief Justice Lord Kenyon stated that "it evidently appears that the patentee claims a monopoly for an engine or machine, composed of material parts, which are to produce the effect described; and that the mode of producing this is so described, as to enable mechanics to produce it.... I have no doubt in saying, that this is a patent for a manufacture, which I understand to be something made by the hands of man." *Id.* at 99. Justice Grose agreed, finding that "Mr. Watt had invented a method of lessening the consumption of steam and fuel in [steam] engines", and this was "not a patent for a mere principle, but for the working and making of a new manufacture within the words and meaning of the statute." *Id.* at 101-02. He further noted, however, that "This method ... *if not effected or accompanied by a manufacture*, I should hardly consider as within the [statute]." *Id.* at 102-03 (emphasis added). Justice Lawrence similarly found such process patents to be permissible: "Engine and method mean the same thing, and may be the subject of a patent. 'Method,' properly speaking, is only placing several things and performing several operations in the most convenient order...." Id. at 106.

There is no suggestion in any of this early consideration of process patents that processes for organizing human activity were or ever had been patentable. Rather, the uniform assumption was that the only processes that were patentable were processes for using or creating manufactures, machines, and compositions of matter.

B

The dissenters here, by implication at least, appear to assume that this consistent English practice should somehow be ignored in interpreting the current statute because of technological change.[14] There are several responses to this.

The first of these is that the Supreme Court has made clear that when Congress intends to codify existing law, as was the case with the 1793 statute, the law must be interpreted in light of the practice at the time of codification. In Schmuck v. United States, 489 U.S. 705, 718-19, 109 S.Ct. 1443, 103 L.Ed.2d 734 (1989), for example, the Court considered the proper interpretation of Rule 31(c) of the Federal Rules of

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[14] See, e.g., Rader, J., dissenting op. at 1011 ("[T]his court ties our patent system to dicta from an industrial age decades removed from the bleeding edge."); id. ("[T]his court ... links patent eligibility to the age of iron and steel at a time of subatomic particles and terabytes...."); Newman, J., dissenting op. at 1011 ("[T]his court now adopts a redefinition of 'process' in Section 101 that excludes forms of information-based and software-implemented inventions arising from new technological capabilities....").

Criminal Procedure. The rule, "which ha [d] not been amended since its adoption in 1944," was a restatement of an 1872 Act "codif[ying] the common law for federal criminal trials." Because of this fact, the Court found that the "prevailing practice at the time of the Rule's promulgation informs our under-standing of its terms." Id.; see also, e.g., Eldred v. Ashcroft, 537 U.S. 186, 200 n. 5, 123 S.Ct. 769, 154 L.Ed.2d 683 (2003) (considering the English practice at the time of the enactment of the 1790 copyright act); Tome v. United States, 513 U.S. 150, 159-60, 166, 115 S.Ct. 696, 130 L.Ed.2d 574 (1995) (looking to practice and noting that "a majority of common-law courts were performing [a task required by the common law] for well over a century" in interpreting a Federal Rule of Evidence that "was intended to carry over the common-law"); Harper & Row Publishers, Inc. v. Nation Enters., 471 U.S. 539, 549-554, 105 S.Ct. 2218, 85 L.Ed.2d 588 (1985) (relying on the history and practice of copyright fair-use when statutory provision reflected the "intent of Congress to codify the common-law doctrine"); Sprague v. Ticonic Nat'l Bank, 307 U.S. 161, 164-65, 59 S.Ct. 777, 83 L.Ed. 1184 (1939) (considering the English practice "which theretofore had been evolved in the English Court of Chancery" at the time of the 1789 Judiciary Act in determining availability of costs under equity jurisdiction).

Second, the Supreme Court language upon which the dissents rely[15] offers no warrant for rewriting the

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[15] See, e.g., Newman, J., dissenting op. at 981 ("'[C]ourts should not read into the patent laws limitations and conditions which the legislature has not expressed.'" (quoting Diehr, 450 U.S. at 182, 101 S.Ct. 1048)); Rader, J., dissenting op. at 1012 (same).

1793 Act. To be sure, Congress intended the courts to have some latitude in interpreting § 101 to cover emerging technologies, Chakrabarty, 447 U.S. at 316, 100 S.Ct. 2204, and the categorical terms chosen are sufficiently broad to encompass a wide range of new technologies. But there is no evidence that Congress intended to confer upon the courts latitude to extend the categories of patentable subject matter in a significant way. To the contrary, the Supreme Court made clear that "Congress has performed its constitutional role in defining patentable subject matter in § 101; we perform ours in construing the language Congress has employed. In so doing, our obligation is to take statutes as we find them, guided, if ambiguity appears, by the legislative history and statutory purpose." Id. at 315, 100 S.Ct. 2204. In Benson, the Court rejected the argument that its decision would "freeze process patents to old technologies, leaving no room for the revelations of the new, onrushing technology." Gottschalk v. Benson, 409 U.S. 63, 71, 93 S.Ct. 253, 34 L.Ed.2d 273 (1972). Instead, the Court explained that it "may be that the patent laws should be extended to cover [such onrushing technology], a policy matter to which we are not competent to speak" but that "considered action by the Congress is needed." Id. at 72-73, 93 S.Ct. 253.

Third, we are not dealing here with a type of subject matter unknown in 1793. One commentator has noted:

> The absence of business method patents cannot be explained by an absence of entrepreneurial creativity in Great Britain during the century before the American Revolution. On the contrary, 1720 is widely hailed as the beginning of a new

> era in English public finance and the beginning of major innovations in business organization.

Malla Pollack, The Multiple Unconstitutionality of Business Method Patents, 28 Rutgers Computer & Tech. L.J. 61, 96 (2002) (footnotes omitted).[16] In the hundreds of patents in Woodcroft's exhaustive list of English patents granted from 1612 to 1793, there appears to be only a single patent akin to the type of method Bilski seeks to claim. That sole exception was a patent granted to John Knox in 1778 on a "Plan for assurances on lives of persons from 10 to 80 years of age."[17] Later commentators have viewed this single patent as clearly contrary to the Statute of Monopolies:

> Such protection of an idea should be impossible .... It is difficult to understand how Knox's plan for insuring lives could be regarded as 'a new manner of manufacture'; perhaps the Law Officer was in a very good humour that day, or perhaps he had forgotten the wording of the statute; most likely he was concerned only with the promised 'very considerable Consumption of [Revenue] Stamps' which, Knox declared, would 'contribute to the increase of the Public Revenues.'

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[16] Similarly, another commentator states: "it might be wondered why none of the many ingenious schemes of insurance has ever been protected by patenting it." D.F. Renn, John Knox's Plan for Insuring Lives: A Patent of Invention in 1778, 101 J. Inst. Actuaries 285 (1974), available at http://www.actuaries.org.uk/_data/assets/pdf_file/0006/25278/0285-0289.pdf (last visited Oct. 3, 2008).

[17] Woodcroft, supra n.12 at 324.

Renn, supra n. 16 at 285. There is no indication that Knox's patent was ever enforced or its validity tested, or that this example led to other patents or efforts to patent similar activities. But the existence of the Knox patent suggests that as of 1793 the potential advantage of patenting such activities was well-understood.

In short, the need to accommodate technological change in no way suggests that the judiciary is charged with rewriting the statute to include methods for organizing human activity that do not involve manufactures, machines, or compositions of matter.

C

Since the 1793 statute was reenacted in 1952, it is finally important also to inquire whether between 1793 and 1952 the U.S. Patent Office and the courts in this country had departed from the English practice and allowed patents such as those sought by Bilski. In fact, the U.S. Patent Office operating under the 1793 Act hewed closely to the original understanding of the statute. As in the English practice of the time, there is no evidence that patents were granted under the 1793 Act on methods of organizing human activity not involving manufactures, machines or the creation of compositions of matter. The amicus briefs have addressed the early American practice, and some of them claim that human activity patents were allowed in the early period. To the contrary, the patents cited in the briefs are plainly distinguishable.

The earliest claimed human activity patent cited in the briefs issued in 1840, entitled "Improvement in the Mathematical Operation of Drawing Lottery-Schemes." Br. of Amicus Curiae Regulatory Datacorp

23 n.54. But that patent is fundamentally unlike the Bilski claim, since it does not claim a method of organizing human activity not involving manufactures, machines or the creation of compositions of matter. See U.S. Patent No. 1700 (issued July 18, 1840). Rather, it is directed to a scheme of combining different combinations of numbers onto a large number of physical lottery tickets (i.e., a method for manufacturing lottery tickets). Id. col.1. The other early-issued patents cited in the amicus briefs are similarly distinguishable.[18]

Likewise, Supreme Court decisions before the 1952 Patent Act assumed that the only processes that were patentable were those involving other types of patentable subject matter. In later cases the Supreme Court has recognized that these cases set forth the standard for process patents in the pre-1952 period. Diehr, 450 U.S. at 182-84, 101 S.Ct. 1048; Gottschalk, 409 U.S. at 69-70, 93 S.Ct. 253. The leading case is Corning v. Burden, 56 U.S. 252, 15 How. 252, 14 L.Ed. 683 (1853). There, the Supreme Court discussed the patentability of processes:

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[18] See, e.g., Complemental Accident Insurance Policy, U.S. Patent No. 389,818 (issued Sept. 18, 1888) (claiming a "complemental insurance policy" as an apparatus consisting of two separate cards secured together); Insurance System, U.S. Patent No. 853,852 (issued May 14, 1907) (claiming a "two-part insurance policy" as "an article of manufacture").

A number of the amici also refer to the discussion and the patents cited in "A USPTO White Paper" (the "White Paper") to establish the historical foundation of business method patents. See, e.g., Br. of Amicus Curiae Accenture 14-15 n. 11. As Judge Mayer notes, dissenting op. at 1001-02 n. 4, the White Paper does not show this proposition. As the White Paper itself recognizes, the early financial patents it discusses were largely mechanical products and methods related to financial paper, not methods for organizing human activity. White Paper at 2. Thus, while the White Paper shows that inventions in the business realm of finance and management historically enjoyed patent protection, it does little to establish that business methods directed to the organization of human activity not involving manufactures, machines or the creation of compositions of matter were similarly patentable.

> A process, eo nomine, is not made the subject of a patent in our act of Congress. It is included under the general term 'useful art.' An art may require one or more processes or machines in order to produce a certain result or manufacture. The term machine includes every mechanical device or combination of mechanical powers and devices to perform some function and produce a certain effect or result. But where the result or effect is produced by chemical action, by the operation or application of some element or power of nature, or of one substance to another, such modes, methods, or operations, are called 'processes.' A new process is usually the result of discovery; a machine, of invention. The arts of tanning, dyeing, making water-proof cloth, vulcanizing India rubber, smelting ores, and numerous others are usually carried on by processes, as distinguished from machines.... It is for the discovery or invention of some practicable method or means of producing a beneficial result or effect that a patent is granted, and not for the result or effect itself. It is when the term process is used to represent the means or method of producing a result that it is patentable, and it will include all methods or means which are not effected by mechanism or mechanical combinations.

Id. at 267-68 (emphases added). In Cochrane v. Deener, the Court clarified its understanding of a patentable "process":

> That a process may be patentable, irrespective of the particular form of the instrumentalities used, cannot be disputed....A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing. If new and useful, it is just as patentable as is a piece of machinery. In the language of the patent law, it is an art. The machinery pointed out as suitable to perform the process may or may not be new or patentable; whilst the process itself may be altogether new, and produce an entirely new result. The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence.

94 U.S. 780, 787-88, 24 L.Ed. 139 (1876) (emphases added). Finally, in Tilghman v. Proctor, 102 U.S. 707, 722, 26 L.Ed. 279 (1880), the Court noted:

> That a patent can be granted for a process there can be no doubt. The patent law is not confined to new machines and new compositions of matter, but extends to any new and useful art or manufacture. A manufacturing process is clearly an art, within the meaning of the law.

(Emphasis added). The Court's definition of a patentable process was well-accepted and consistently applied by the courts of appeals. See, e.g., P.E. Sharpless Co. v. Crawford Farms, 287 F. 655, 658-59 (2nd Cir.1923); Chicago Sugar-Refining Co. v. Charles Pope Glucose Co., 84 F. 977, 982 (7th Cir.1898).

Finally, nothing in the legislative history of the 1952 Act suggests that Congress intended to enlarge the category of patentable subject matter to include patents such as the method Bilski attempts to claim. As discussed above, the only change made by the 1952 Act was in replacing the word "art" with the word "process." The Supreme Court has already concluded that this change did not alter the sub-stantive understanding of the statute. See Diehr, 450 U.S. at 182, 101 S.Ct. 1048 ("[A] process has historically enjoyed patent protection because it was considered a form of 'art' as that term was used in the 1793 Act.").

The House Report accompanying the 1952 bill includes the now-famous reference to "anything under the sun made by man":

> A person may have "invented" a machine or a manufacture, which may include anything under the sun made by man, but it is not necessarily patentable under section 101 unless the conditions of the title are fulfilled.

H.R.1923 at 7. Although this passage has been used by our court in past cases to justify a broad inter-pretation of patentable subject matter, I agree with Judge Mayer that, when read in context, the statement undercuts the notion that Congress intended to expand the scope of § 101. See Mayer, J., dissenting op. at 1000. It refers to things "made by man," not to methods of organizing human activity. In this respect, the language is reminiscent of the 1799 use of the phrase "something made by the hands of man" by Chief Justice Lord Kenyon as a limitation on patentable subject matter under the Statute of Monopolies. The idea that an invention must be "made by man" was used to distinguish "a philosophical principle only, neither organized or capable of being organized" from a patentable manufacture. Hornblower, 8 T.R. at 98. Lord Kenyon held that the patent before him was not based on a mere principle, but was rather "a patent for a manufacture, which I understand to be something made by the hands of man." Id. at 98 (emphases added); accord American Fruit Growers v. Brogdex Co., 283 U.S. 1, 11, 51 S.Ct. 328, 75 L.Ed. 801 (1931) (giving "anything made for use from raw or prepared materials" as one definition of "manufacture").

In short, the history of § 101 fully supports the majority's holding that Bilski's claim does not recite patentable subject matter. Our decision does not reflect "legislative" work, but rather careful and respectful adherence to the Congressional purpose.

NEWMAN, Circuit Judge, dissenting.

The court today acts en banc to impose a new and far-reaching restriction on the kinds of inventions that are eligible to participate in the patent system. The court achieves this result by redefining the word "process" in the patent statute, to exclude all processes that do not transform physical matter or that are not performed by machines. The court thus excludes many of the kinds of inventions that apply today's electronic and photonic technologies, as well as other processes that handle data and information in novel ways. Such processes have long been patent eligible, and contribute to the vigor and variety of today's Information Age. This exclusion of process inventions is contrary to statute, contrary to precedent, and a negation of the constitutional mandate. Its impact on the future, as well as on the thousands of patents already granted, is unknown.

This exclusion is imposed at the threshold, before it is determined whether the excluded process is new, non-obvious, enabled, described, particularly claimed, etc.; that is, before the new process is examined for patentability. For example, we do not know whether the Bilski process would be found patentable under the statutory criteria, for they were never applied.

The innovations of the "knowledge economy"-of "digital prosperity"-have been dominant contributors to today's economic growth and societal change. Revision of the commercial structure affecting major aspects of today's industry should be approached with care, for there has been significant reliance on the law as it has existed, as many amici curiae pointed out. Indeed, the full reach of today's change of law is not clear, and the majority opinion states that many existing situations may require reassessment under the new criteria.

Uncertainty is the enemy of innovation. These new uncertainties not only diminish the incentives available to new enterprise, but disrupt the settled expectations of those who relied on the law as it existed. I respectfully dissent.

DISCUSSION

The court's exclusion of specified process inventions from access to the patent system is achieved by re-defining the word "process" in the patent statute. However, the court's redefinition is contrary to statute and to explicit rulings of the Supreme Court and this court. I start with the statute:

Section 101 is the statement of statutory eligibility

From the first United States patent act in 1790, the subject matter of the "useful arts" has been stated broadly, lest advance restraints inhibit the unknown future. The nature of patent-eligible subject matter has received judicial attention over the years, as new issues arose with advances in science and technology. The Supreme Court has consistently confirmed the constitutional and legislative purpose of providing a broadly applicable incentive to commerce and creativity, through this system of limited exclusivity. Concurrently, the Court early explained the limits of patentable subject matter, in that "fundamental truths" were not intended to be included in a system of exclusive rights, for they are the general foundations of knowledge. Thus laws of nature, natural phenomena, and abstract ideas are not subject to patenting. Several rulings of the Court have reviewed patent eligibility in light of these fundamentals. However, the Court explicitly negated today's restrictions. My colleagues in the majority are mistaken in finding that decisions of the Court require the per se limits to patent eligibility that the Federal Circuit today imposes. The patent statute and the Court's decisions neither establish nor support the exclusionary criteria now adopted.

The court today holds that any process that does not transform physical matter or require performance by machine is not within the definition of "process" in any of the patent statutes since 1790. All of the statutes contained a broad definition of patent-eligible subject matter, like that in the current Patent Act of 1952:

> 35 U.S.C § 101 Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

In Diamond v. Diehr, 450 U.S. 175, 101 S.Ct. 1048, 67 L.Ed.2d 155 (1981) the Court explained that Section 101 is not an independent condition of patentability, but a general statement of subject matter eligibility. The Court stated:

> Section 101, however, is a general statement of the type of subject matter that is eligible for patent protection "subject to the conditions and requirements of this title." Specific conditions for patentability follow and § 102 covers in detail the conditions relating to novelty. The question therefore of whether a particular invention is novel is "wholly apart from whether the invention falls in a category of statutory subject matter."

Id. at 189-90, 101 S.Ct. 1048 (footnote omitted) (quoting In re Bergy, 596 F.2d 952, 961 (C.C.P.A.1979)).

"Process" is defined in the 1952 statute as follows:

> 35 U.S.C. § 100(b) The term "process" means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.

The 1952 Patent Act replaced the word "art" in prior statutes with the word "process," while the rest of Section 101 was unchanged from earlier statutes. The legislative history for the 1952 Act explained that "art" had been "interpreted by courts to be practically synonymous with process or method." S.Rep. No. 82-1979 (1952), reprinted in 1952 U.S.C.C.A.N. 2394, 2398, 2409-10. In Diehr the Court explained that a process "has historically enjoyed patent protection because it was considered a form of 'art' as that term was used in the 1793 Act." 450 U.S. at 182, 101 S.Ct. 1048.

The definition of "process" provided at 35 U.S.C. § 100(b) is not "unhelpful," as this court now states, maj. op. at 951 n. 3, but rather points up the errors in the court's new statutory interpretation. Section 100(b) incorporates the prior usage "art" and the term "method," and places no restriction on the definition. This court's redefinition of "process" as limiting access to the patent system to those pro-cesses that use specific machinery or that transform matter, is contrary to two centuries of statutory definition.

The breadth of Section 101 and its predecessor provisions reflects the legislative intention to accommodate not only known fields of creativity, but also the unknown future. The Court has consistently refrained from imposing unwarranted restrictions on statutory eligibility, and for computer-implemented processes the Court has explicitly rejected the direction now taken. Nonetheless, this court now adopts a redefinition of "process" in Section 101 that excludes forms of information-based and software-implemented inventions arising from new technological capabilities, stating that this result is required by the Court's computer-related cases, starting with Gottschalk v. Benson, 409 U.S. 63, 93 S.Ct. 253, 34 L.Ed.2d 273 (1972). However, the Court in Benson rejected the restriction that is imposed today:

This court's new definition of "process" was rejected in Gottschalk v. Benson

In Benson the claimed invention was a mathematical process for converting binary-coded decimal numerals into pure binary numbers. The Court explained that a mathematical formula unlimited to a specific use was simply an abstract idea of the nature of "fundamental truths," "phenomena of nature," and "abstract intellectual concepts," as have traditionally been outside of patent systems. 409 U.S. at 67, 93 S.Ct. 253. However, the Court explicitly declined to limit patent-eligible processes in the manner now adopted by this court, stating:

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a "different state or thing." We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents. It is said that the decision precludes a patent for any program servicing a computer. We do not so hold.

Id. at 71, 93 S.Ct. 253. The Court explained that "the requirements of our prior precedents" did not preclude patents on computer programs, despite the statement drawn from Cochrane v. Deener, 94 U.S. 780, 787-88, 24 L.Ed. 139 (1876), that "[t]rans-formation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines." Benson, 409 U.S. at 70, 93 S.Ct. 253. Although this same statement is now relied upon by this court as requiring its present ruling, maj. op at 956 & n. 11, the Court in Benson was explicit that: "We do not hold that no process patent could ever qualify if it did not meet [the Court's] prior pre-cedents." The Court recognized that Cochrane's statement was made in the context of a mechanical process and a past era, and protested:

> It is said we freeze process patents to old technologies, leaving no room for the revelations of the new, onrushing technology. Such is not our purpose.

Benson, 409 U.S. at 71, 93 S.Ct. 253. Instead, the Court made clear that it was not barring patents on computer programs, and rejected the "argu[ment] that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing'" in order to satisfy Section 101. Id. Although my colleagues now describe these statements as "equivocal," maj. op. at 956, there is nothing equivocal about "We do not so hold." Benson, 409 U.S. at 71, 93 S.Ct. 253. Nonetheless, this court now so holds.

In Parker v. Flook the Court again rejected today's restrictions

The eligibility of mathematical processes next reached the Court in Parker v. Flook, 437 U.S. 584, 98 S.Ct. 2522, 57 L.Ed.2d 451 (1978), where the Court held that the "process" category of Section 101 was not met by a claim to a mathematical formula for calculation of alarm limits for use in connection with catalytic conversion of hydrocarbons and, as in Benson, the claim was essentially for the mathematical formula. The Court later summarized its Flook holding, stating in Diamond v. Diehr that:

> The [Flook] application, however, did not purport to explain how these other variables were to be determined, nor did it purport "to contain any disclosure relating to the chemical processes at work, the monitoring of the process variables, nor the means of setting off an alarm or adjusting an alarm system. All that it provides is a formula for computing an updated alarm limit."

Diehr, 450 U.S. at 186-87, 101 S.Ct. 1048 (quoting Flook, 437 U.S. at 586, 98 S.Ct. 2522).

The Court explained in Flook that a field-of-use restriction to catalytic conversion did not distinguish Flook's mathematical process from that in Benson. However, the Court reiterated that patent eligibility of computer-directed processes is not controlled by the "qualifications of our earlier precedents," again negating any limiting effect of the usages of the past, on which this court now places heavy reliance. The Court stated:

> The statutory definition of "process" is broad. An argument can be made, however, that this Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a "different state or thing." As in Benson, we assume that a valid process patent

> may issue even if it does not meet one of these qualifications of our earlier precedents.[1]

Flook, 437 U.S. at 589 n. 9, 98 S.Ct. 2522 (quoting Cochrane, 94 U.S. at 787). This statement directly contravenes this court's new requirement that all processes must meet the court's "machine-or-transformation test" or be barred from access to the patent system.

The Court in Flook discussed that abstractions and fundamental principles have never been subject to patenting, but recognized the "unclear line" between an abstract principle and the application of such principle:

> The line between a patentable "process" and an unpatentable "principle" is not always clear. Both are "conception[s] of the mind, seen only by [their] effects when being executed or performed."

Flook, 437 U.S. at 589, 98 S.Ct. 2522 (alterations in original) (quoting Tilghman v. Proctor, 102 U.S. 707, 728, 26 L.Ed. 279 (1880)).

The decision in Flook has been recognized as a step in the evolution of the Court's thinking about computers. See Arrhythmia Res. Tech., Inc. v. Corazonix Corp., 958 F.2d 1053, 1057 n. 4 (Fed.Cir.1992) ("it appears to be generally agreed that these decisions represent evolving views of the Court") (citing R.L. Gable & J.B. Leaheey, The Strength of Patent Pro-tection for Computer Products, 17 Rutgers Computer & Tech. L.J. 87 (1991); D. Chisum, The Patentability of Algorithms, 47 U. Pitt. L.Rev. 959 (1986)). That Flook does not support today's per se exclusion of forms of process inventions from access to the patent system is reinforced in the next Section 101 case decided by the Court:

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[1] My colleagues cite only part of this quotation as the Court's holding in Flook, maj. op. at 955, ignoring the qualifying words "[a]n argument can be made" as well as the next sentence clarifying that this argument was rejected by the Court in Benson and is now again rejected in Flook.

In Diamond v. Chakrabarty the Court again rejected per se exclusions of subject matter from Section 101

In Diamond v. Chakrabarty, 447 U.S. 303, 100 S.Ct. 2204, 65 L.Ed.2d 144 (1980), the scope of Section 101 was challenged as applied to the new fields of biotechnology and genetic engineering, with respect to the patent eligibility of a new bacterial "life form." The Court explained the reason for the broad terms of Section 101:

> The subject-matter provisions of the patent law have been cast in broad terms to fulfill the constitutional and statutory goal of promoting "the Progress of Science and the useful Arts" with all that means for the social and economic benefits envisioned by Jefferson. Broad general language is not necessarily ambiguous when congressional objectives require broad terms.

Id. at 315, 100 S.Ct. 2204 (quoting U.S. Const., art. I, § 8). The Court referred to the use of "any" in Section 101 ("Whoever invents or discovers any new and useful process ... or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title"), and reiterated that the statutory language shows that Congress "plainly contemplated that the patent laws would be given wide scope." Id. at 308, 100 S.Ct.

2204. The Court referred to the legislative intent to include within the scope of Section 101"anything under the sun that is made by man," id. at 309, 100 S.Ct. 2204 (citing S. Rep. 82-1979, at 5, U.S.Code Cong. & Admin.News 1952, pp. 2394, 2399; H.R. Rep. 82-1923, at 6 (1952)), and stated that the unforeseeable future should not be inhibited by judicial restriction of the "broad general language" of Section 101:

> A rule that unanticipated inventions are without protection would conflict with the core concept of the patent law that anticipation undermines patentability. Mr. Justice Douglas reminded that the inventions most benefiting mankind are those that push back the frontiers of chemistry, physics, and the like. Congress employed broad general language in drafting § 101 precisely because such inventions are often unforeseeable.

Id. at 315-16, 100 S.Ct. 2204 (citations and internal quotation marks omitted). The Court emphasized that its precedents did not alter this understanding of Section 101's breadth, stating that " Flook did not announce a new principle that inventions in areas not contemplated by Congress when the patent laws were enacted are unpatentable per se." Id. at 315, 100 S.Ct. 2204.

Whether the applications of physics and chemistry that are manifested in advances in computer hardware and software were more or less foreseeable than the advances in biology and biotechnology is debatable, but it is not debatable that these fields of endeavor have become primary contributors to today's economy and culture, as well as offering an untold potential for future advances. My colleagues offer no reason now to adopt a policy of exclusion of the unknown future from the subject matter now embraced in Section 101.

Soon after Chakrabarty was decided, the Court returned to patentability issues arising from computer capabilities:

In Diamond v. Diehr the Court directly held that computer-implemented processes are included in Section 101

The invention presented to the Court in Diehr was a "physical and chemical process for molding precision synthetic rubber products" where the process steps included using a mathematical formula. The Court held that the invention fit the "process" category of Section 101 although mathematical calculations were involved, and repeated its observation in Chakrabarty that "courts should not read into the patent laws limitations and conditions which the legislature has not expressed." Diehr, 450 U.S. at 182, 101 S.Ct. 1048 (internal quotation marks omitted) (citing Chakrabarty, 447 U.S. at 308, 100 S.Ct. 2204).

The Court distinguished a claim that would cover all uses of a mathematical formula and thus is an abstract construct, as in Benson, from a claim that applies a mathematical calculation for a specified purpose, as in Diehr. The Court stated that "a claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula, computer program, or digital computer," id. at 187, 101 S.Ct. 1048, and explained that the line between statutory and nonstatutory processes depends on whether the process is directed to a specific purpose, see id. ("It is now commonplace that an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection."(emphasis in original)). The Court clarified that Flook did not hold that claims may be dissected into old and new parts to assess their patent eligibility. Id. at 189 n. 12, 101 S.Ct. 1048.

However, the Court did not propose the "machine-or-transformation" test that this court now insists was "enunciated" in Diehr as a specific limit to Section 101. Maj. op. at 953-54. In Diehr there was no issue of machine or transformation, for the Diehr process both employed a machine and produced a chemical transformation: the process was conducted in "an openable rubber molding press," and it cured the rubber. In discussing the known mathematical formula used by Diehr to calculate the relation between temperature and the rate of a chemical reaction, the Court recited the traditional exceptions of "laws of nature, natural phenomena, and abstract ideas," 450 U.S. at 185, 101 S.Ct. 1048, and explained that the entirety of the process must be considered, not an individual mathematical step.

The Court characterized the holdings in Benson and Flook as standing for no more than the continued relevance of these "long-established" judicial exclusions, id., and repeated that a practical application of pure science or mathematics may be patentable, citing Mackay Radio & Telegraph Co. v. Radio Corp. of America, 306 U.S. 86, 94, 59 S.Ct. 427, 83 L.Ed. 506 (1939) ("While a scientific truth, or the mathematical expression of it, is not a patentable invention, a novel and useful structure created with the aid of knowledge and scientific truth may be."). The Court explained that the presence of a mathematical formula does not preclude patentability when the structure or process is performing a function within the scope of the patent system, stating:

> [W]hen a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (e.g., transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101.

450 U.S. at 192, 101 S.Ct. 1048. This statement's parenthetical "e.g." is relied on by the majority for its statement that Diehr requires today's "machine-or-transformation" test. However, this "e.g." does not purport to state the only "function which the patent laws were designed to protect." Id. This "e.g." indeed describes the process in Diehr, but it does not exclude all other processes from access to patenting.

It cannot be inferred that the Court intended, by this "e.g." parenthetical, to require the far-reaching exclusions now attributed to it. To the contrary, the Court in Diehr was explicit that "an application of a law of nature or mathematical formula" may merit patent protection, 450 U.S. at 187, 101 S.Ct. 1048 (emphasis in original), and that the claimed process must be considered as a whole, id. at 188, 101 S.Ct. 1048. The Court recognized that a process claim may combine steps that were separately known, and that abstract ideas such as mathematical formulae may be combined with other steps to produce a patentable process. Id. at 187, 101 S.Ct. 1048. The steps are not to be "dissect[ed]" into new and old steps; it is the entire process that frames the Section 101 inquiry. Id. at 188, 101 S.Ct. 1048.

The Diehr Court did not hold, as the majority opinion states, that transformation of physical state is a requirement of eligibility set by Section 101 unless the process is performed by a machine. It cannot be inferred that the Court silently imposed such a rule. See maj. op. at 956 (relying on lack of repetition in Diehr of the Benson and Flook dis-claimers of requiring machine or transformation, as an implicit rejection of these disclaimers and tacit adoption of the requirement). There was no issue in Diehr of the need for either machine or trans-formation, for both were undisputedly present in the process of curing rubber. It cannot be said that the Court "enunciated" today's "definitive test" in Diehr.[2]

Subsequent Supreme Court authority reinforced the breadth of Section 101

In J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred International, Inc., 534 U.S. 124, 122 S.Ct. 593, 151 L.Ed.2d 508 (2001), the Court described Section 101 as a "dynamic provision designed to encompass new and unforeseen inventions," id. at 135, 122 S.Ct. 593, that case arising in the context of eligibility of newly developed plant varieties for patenting. The Court stated: "As in Chakrabarty, we decline to narrow the reach of § 101 where Congress has given us no indication that it intends this result." Id. at 145-46, 122 S.Ct. 593. The Court reiterated that "Congress plainly contemplated that the patent laws would be given wide scope," id. at 130, 122 S.Ct. 593 (quoting Chakrabarty, 447 U.S. at 308, 100 S.Ct. 2204), and that the language of Section 101 is "extremely broad," id. This is not language of restriction, and it reflects the statutory policy and purpose of inclusion, not exclusion, in Section 101.

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[2] Many amici curiae pointed out that the Supreme Court did not adopt the test that this court now attributes to it. See, e.g., Br. of Amicus Curiae Am. Intellectual Property Law Ass'n at 18 & n.16; Br. of Amicus Curiae Biotechnology Industry Org. at 17-21; Br. of Amicus Curiae Boston Patent Law Ass'n at 6-8; Br. of Amicus Curiae Business Software Alliance at 13; Br. of Amicus Curiae Federal Circuit Bar Ass'n at 21; Br. of Amicus Curiae Regulatory Datacorp, Inc. at 12-13; Br. of Amicus Curiae Accenture at 16-17; Br. of Amicus Curiae Washington State Patent Law Ass'n at 10-11.

The Court's decisions of an earlier age do not support this court's restrictions of Section 101

My colleagues also find support for their restrictions on patent-eligible "process" inventions in the pre-Section 101 decisions O'Reilly v. Morse, 56 U.S. (15 How.) 62, 14 L.Ed. 601 (1853), Cochrane v. Deener, 94 U.S. 780, 24 L.Ed. 139 (1876), and Tilghman v. Proctor, 102 U.S. 707, 26 L.Ed. 279 (1880). Although the Court in Benson and in Flook took care to state that these early decisions do not require the restrictions that the Court was rejecting, this court now places heavy reliance on these early decisions, which this court describes as "consistent with the machine-or-transformation test later articulated in Benson and reaffirmed in Diehr." Maj. op. at 955. As I have discussed, no such test was "articulated in Benson " and "reaffirmed in Diehr."

However, these early cases do show, contrary to the majority opinion, that a "process" has always been a distinct category of patentable invention, and not tied to either apparatus or transformation, as this court now holds. For example, in Tilghman v. Proctor the Court considered a patent on a process for separating fats and oils, and held that the process was not restricted to any particular apparatus. The Court held that a process is an independent category of invention, and stated:

> That a patent can be granted for a process, there can be no doubt. The patent law is not confined to new machines and new compositions of matter, but extends to any new and useful art or manufacture.

102 U.S. at 722; see also Corning v. Burden, 56 U.S. (15 How.) 252, 268, 14 L.Ed. 683 (1853) ("It is for the discovery or invention of some practical method or means of producing a beneficial result or effect, that a patent is granted, and not for the result or effect itself.") The difference between a process and the other categories of patent-eligible subject matter does not deprive process inventions of the independent status accorded by statute, by precedent, and by logic, all of which negate the court's new rule that a process must be tied to a particular machine or must transform physical matter.

The majority also relies on O'Reilly v. Morse, citing the Court's rejection of Morse's Claim 8 for "the use of the motive power of the electro or galvanic current, which I call electromagnetism, however developed, for making or printing intelligible characters, signs or letters at any distances...." The Court explained:

> In fine he claims an exclusive right to use a manner and process which he has not described and indeed had not invented, and therefore could not describe when he obtained his patent. The Court is of the opinion that the claim is too broad, and not warranted by law.

56 U.S. (15 How.) at 113. However, the claims that were directed to the communication system that was described by Morse were held patentable, although

no machine, transformation, or manufacture was required. See Morse's Claim 5 ("The system of signs, consisting of dots and spaces, and horizontal lines, for numerals, letters, words, or sentences, substantially as herein set forth and illustrated, for telegraphic purposes."). I cannot discern how the Court's rejection of Morse's Claim 8 on what would now be Section 112 grounds, or the allowance of his other claims, supports this court's ruling today. Indeed, Morse's claim 5, to a system of signs, is no more "tangible" than the systems held patentable in Alappat and State Street Bank, discussed post and now cast into doubt, or the Bilski system here held ineligible for access to patenting.

The majority opinion also relies on Cochrane v. Deener, particularly on certain words quoted in subsequent opinions of the Court. In Cochrane the invention was a method for bolting flour, described as a series of mechanical steps in the processing of flour meal. The question before the Court was whether the patented process would be infringed if the same steps were performed using different machinery. The answer was "that a process may be patentable, irrespective of the particular form of the instrumentalities used." 94 U.S. at 788. The Court stressed the independence of a process from the tools that perform it:

> A process is a mode of treatment of certain materials to produce a given result. It is an act, or series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing. If new and useful, it is just as patentable as is a piece of machinery. In the language of the patent law, it is an art. The machinery pointed out as suitable to perform the process may or may not be new or patentable; whilst the

> process itself may be altogether new, and produce an entirely new result. The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence.

94 U.S. at 788. The Court did not restrict the kinds of patentable processes; the issue in Cochrane was whether the process must be tied to the machinery that the patentee used to perform it.

This court now cites Cochrane's description of a process as "acts performed upon subject-matter to be transformed and reduced to a different state or thing," id., this court stating that unless there is transformation there is no patentable process. That is not what this passage means. In earlier opinions this court and its predecessor court stated the correct view of this passage, as has the Supreme Court. The Court of Customs and Patent Appeals observed:

> [This Cochrane passage] has sometimes been misconstrued as a 'rule' or 'definition' requiring that all processes, to be patentable, must operate physically on substances. Such a result misapprehends the nature of the passage quoted as dictum, in its context, and the question being discussed by the author of the opinion. To deduce such a rule from the statement would be contrary to its intendment which was not to limit process patentability but to point out that a process is not limited to the means used in performing it.

In re Prater, 56 C.C.P.A. 1381, 415 F.2d 1393, 1403 (1969). Again in In re Schrader, 22 F.3d 290, 295 n. 12 (Fed.Cir.1994) this court noted that Cochrane did not limit patent eligible subject matter to physical transformation, and that transformation of "intangibles" could qualify for patenting. In AT&T Corp. v. Excel Communications, Inc., 172 F.3d 1352, 1358 (Fed.Cir.1999), this court described physical transformation as "merely one example of how a mathematical algorithm may bring about a useful application."

The Court saw the Cochrane decision in its proper perspective. Both Flook and Benson rejected the idea that Cochrane imposed the requirement of either specific machinery or the transformation of matter, as discussed ante. See Flook, 437 U.S. at 588 n. 9, 98 S.Ct. 2522; Benson, 409 U.S. at 71, 93 S.Ct. 253. Nontransformative processes were not at issue in either Cochrane or Diehr, and there is no endorsement in Diehr of a "machine-or-transformation" requirement for patentable processes.

These early cases cannot be held now to require exclusion, from the Section 101 definition of "pro-cess," of all processes that deal with data and information, whose only machinery is electrons, photons, or waves, or whose product is not a transformed physical substance.

The English Statute of Monopolies and English common law do not limit "process" in Section 101

I comment on this aspect in view of the proposal in the concurring opinion that this court's new two-prong test for Section 101 process inventions was implicit in United States law starting with the Act of 1790, because of Congress's knowledge of and importation of English common law and the English Statute of Monopolies of 1623. The full history of patent law in England is too ambitious to be achieved within the confines of Bilski's appeal,[3] and the concurring opinion's selective treatment of this history may propagate misunderstanding.

The concurrence places primary reliance on the Statute of Monopolies, which was enacted in response to the monarchy's grant of monopolies "to court favorites in goods or businesses which had long before been enjoyed by the public." *Graham v. John Deere Co.*, 383 U.S. 1, 5, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966) (citing Peter Meinhardt, *Inventions, Patents and Monopoly* 30-35 (1946)). The Statute of Monopolies outlawed these "odious monopolies" or favors of the Crown, but, contrary to the concurring opinion, the Statute had nothing whatever to do with narrowing or eliminating categories of inventive subject matter eligible for a British patent. See Prager, Historical Background and Foundation of American Patent Law, 5 Am. J. Legal Hist. at 313 ("The statute [of Monopolies] said nothing about meritorious functions of patents, nothing about patent disclosures, and nothing about patent procedures; it was only directed against patent abuses.").

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[3] Scholarly histories include M. Frumkin, *The Origin of Patents*, 27 J.P.O.S. 143 (1945); E. Wyndham Hulme, *Privy Council Law and Practice of Letters Patent for Invention from the Restoration to 1794*, 33 L.Q. Rev. 63 (Part I), 180 (Part II) (1917); Hulme, *On the History of Patent Law in the Seventeenth and Eighteenth Centuries*, 18 L.Q. Rev. 280 (1902); Hulme, *The History of the Patent System Under the Prerogative and at Common Law*, 12 L.Q. Rev. 141 (1896); Ramon A. Klitzke, *Historical Background of the English Patent Law*, 41 J.P.O.S 615 (1959); Christine MacLeod, *Inventing the Industrial Revolution: The English Patent System 1660-1800* (1988); Frank D. Prager, *Historic Background and Foundation of American Patent Law*, 5 Am. J. Legal Hist. 309 (1961); Brad Sherman & Lionel Bently, *The Making of Modern Intellectual Property Law: The British Experience, 1760-1911* (1999); Edward C. Walterscheid, *The Early Evolution of the United States Patent Law: Antecedents, printed serially at* J. Pat. & Trademark Off. Soc'y ("J.P.T.O.S.") 76:697 (1994) (Part 1); 76:849 (1994) (Part 2); 77:771, 847 (1995) (Part 3); 78:77 (1996) (Part 4); 78:615 (1996) (Part 5, part I); and 78:665 (1996) (Part 5, part II) (hereinafter "*Early Evolution*"); and Edward C. Walterscheid, *To Promote the Progress of Useful Arts: American Patent Law and Administration, 1798-1836* (1998).

Patents for inventions had been granted by the Crown long before 1623. See Hulme, The History of the Patent System Under the Prerogative and at Common Law, 12 L.Q. Rev. at 143 (the first patent grant to the "introducer of a newly-invented process" was in 1440); Klitzke, Historical Background of the English Patent Law, 41 J.P.O.S. at 626-27 (discussing first patents for "invention" in England in the fifteenth century). That practice was unaffected by the terms of the Statute of Monopolies, which rendered "utterly void" all "Monopolies and all Commissions, Grants, Licenses, Charters and Letters Patent" that were directed to "the sole Buying, Selling, Making, Working or Using any Thing within this Realm," 21 Jac. 1, c.3, § I (Eng.), but which specifically excepted Letters Patent for inventions from that exclusion, id. § VI. The only new limitation on patents for invention was a fourteen-year limit on the term of exclusivity. See Klitzke, Historical Background of the English Patent Law, 41 J.P.O.S. at 649.

The usage "Letters Patent" described one of the forms of document whereby the Crown granted various rights, whether the grant was for an odious monopoly that the Statute of Monopolies eliminated, or for rights to an invention new to England. That usage was not changed by the Statute of Monopolies. Nor were other aspects of the British practice which differed from that enacted in the United States, particularly the aspect whereby a British patent could be granted to a person who imported something that was new to England, whether or not the import was previously known or the importer was the inventor thereof. In England, "[t]he rights of the inventor are derived from those of the importer, and not vice versa as is commonly supposed." Hulme, The History of the Patent System Under the Prerogative and at Common Law, 12 L.Q.R. at 152; see also MacLeod, Inventing the Industrial Revolution 13 ("The rights of the first inventor were understood to derive from those of the first importer of the invention.").

In contrast, in the United States the patent right has never been predicated upon importation, and has never been limited to "manufactures." See, e.g., Walterscheid, To Promote the Progress of Useful Arts 93, 137-38, 224; see also Prager, Historic Background and Foundation of American Patent Law, 5 Am. J. Legal Hist. at 309 ("The American Revolution destroyed many of the ancient customs; it brought a sweeping reorientation of patent law, with new forms, new rules, new concepts, and new ideals."). The differences between the American and English patent law at this nation's founding were marked, and English judicial decisions interpreting the English statute are of limited use in interpreting the United States statute. In all events, no English decision supports this court's new restrictive definition of "process."

The concurrence proposes that the Statute of Monopolies provides a binding definition of the terms "manufacture," "machine," "composition of matter," and "process" in Section 101 of the U.S. Patent Act. See concurring op. at 968-70. The only one of these terms that appears in the Statute of Monopolies is "manufacture", a broad term that reflects the usage of the period. Even at the time of this country's founding, the usage was broad, as set forth in Samuel Johnson's Dictionary of the English Language (3d. ed. 1768), which defines "manufacture" as "any thing made by art," and defines "art" as "the power of doing something not taught by nature and instinct"; "a science"; "a trade"; "artfulness"; "skill"; "dexterity." Historians explain that England's primary motive for patenting was to promote "[a]cquisition of superior Continental technology" at a time when England lagged behind, see MacLeod, Inventing the Industrial Revolution 11; this cannot be interpreted to mean that England and perforce the United States intended to eliminate "processes" from this incentive system. It is inconceivable that on this background the Framers, and again the enactors of the first United States patent statutes in 1790 and 1793, intended sub silentio to impose the limitations on "process" now created by this court.

Congress' earliest known draft patent bill included the terms "art, manufacture, engine, machine, invention or device, or any improvement upon the same." Walterscheid, To Promote the Progress of Useful Arts 92. The 1793 Act explicitly stated "any new and useful art," § 1, 1 Stat. 318 (1793), a usage that was carried forward until "art" was replaced with "process" in 35 U.S.C. § 101 and defined in § 100(b). Historians discuss that Congress' inclusion of any "art" or "process" in the patent system was a deliberate clarification of the English practice. See Walterscheid, To Promote the Progress of Useful Arts 93 ("[The first patent bill] appears to be an obvious attempt to deal legislatively with issues that were beginning to be addressed by the English courts.... [I]t states unequivocally that improvement inventions are patentable and expands the definition of invention or discovery beyond simply 'manufacture.'"); Karl B. Lutz, Patents and Science: A Clarification of the Patent Clause of the U.S. Constitution, 32 J.P.O.S. 83, 86 (1950) ("By the year 1787 it was being recognized even in Great Britain that the phrase 'new manufactures' was an unduly limited object for a patent system, since it seems to exclude new processes.... [This question was] resolved in the United States Constitution by broadening the field from 'new manufactures' to 'useful arts'....").

In interpreting a statute, it is the language selected by Congress that occupies center stage: "[O]ur obligation is to take statutes as we find them, guided, if ambiguity appears, by the legislative history and statutory purpose." Chakrabarty, 447 U.S. at 315, 100 S.Ct. 2204. The Court has "perceive[d] no ambiguity" in Section 101, leaving no need for foreign assistance. Id. The legislative choice to afford the patent system "wide scope," id. at 308, 100 S.Ct. 2204, including "process" inventions, evolved in the United States independent of later developments of the common law in England.

The concurrence concludes that the Statute of Monopolies foreclosed the future patenting of any-thing that the concurrence calls a "business method"-the term is not defined-whether or not the method is new, inventive, and useful. But the Statute of Monopolies only foreclosed "odious" monopolies, illustrated by historical reports that Queen Elizabeth had granted monopolies on salt, ale, saltpeter, white soap, dredging machines, playing cards, and rape seed oil, and on processes and services such as Spanish leather-making, mining of various metals and ores, dying and dressing cloth, and iron tempering. See

Walterscheid, Early Evolution (Part 2), 76 J.P.T.O.S. at 854 n.14; Klitzke, Historical Background of the English Patent Law, 41 J.P.O.S. at 634-35. These and other grants, many of which were implemented by Letters Patent, were the "odious monopolies" that were rendered illegal. They included several classes of known activity, product and process, and had nothing to do with new "inventions." The Statute of Monopolies cannot be held to have restricted the kinds of new processes that can today be eligible for patenting in the United States, merely because it outlawed patents on non-novel businesses in England. The presence or absence of "organizing human activity," a vague term created by the concurrence, has no connection or relevance to Parliament's elimination of monopoly patronage grants for old, established arts. The Statute of Monopolies neither excluded nor included inventions that involve human activity, although the words "the sole working or making in any manner of new manufactures" pre-suppose human activity. 21 Jac. 1, c.3, § VI (emphases added). We are directed to no authority for the proposition that a new and inventive process involving "human activity" has historically been treated differently from other processes; indeed, most inventions involve human activity.

The concurrence has provided hints of the complexity of the evolution of patent law in England, as in the United States, as the Industrial Revolution took hold. Historians have recognized these complexities. See, e.g., Walterscheid, To Promote the Progress of Useful Arts 5 ("[T]he American patent law almost from its inception departed from its common law counterpart in the interpretation that would be given to the definition of novelty...."); Klitzke, Historical Background of the English Patent Law, 41 J.P.O.S.

at 638 (noting that in Elizabethan times, novelty only required a showing that "the industry had not been carried on within the realm within a reasonable period of time", while today "the proof of a single public sale of an article" or a "printed publication" can negate patentability).

I caution against over-simplification, particularly in view of the uncertainties in English common law at the time of this country's founding. See Boulton v. Bull, 2 H. Bl. 463, 491 (C.P.1795) (Eyre, C.J.) ("Patent rights are no where that I can find accurately discussed in our books."); MacLeod, Inventing the Industrial Revolution 61 ("It was only from the time when the Privy Council relinquished jurisdiction that a case law on patents began to develop.... But it was a slow process and even the spate of hard-fought patent cases at the end of the eighteenth century did little to establish a solid core of judicial wisdom."). The English judicial opinions of the eighteenth century were not as limiting on the United States as my colleagues suggest. See Walterscheid, The Nature of the Intellectual Property Clause: A Study in Historical Perspective 355 (2002) ("In the eighteenth century, patentees and those who gave advice con-cerning patents were certainly of the view that the Statute did not preclude the patenting of general principles of operation."); see also MacLeod, Inventing the Industrial Revolution 63-64.

It is reported that in the century and a half following enactment of the Statute of Monopolies, the English patent registers were replete with inventions claimed as "processes." See Walterscheid, Early Evolution (Part 3), 77 J.P.T.O.S. at 856 ("As one of the earliest texts on the patent law stated in 1806: "most of the patents now taken out, are by name, for the method of doing particular things...."). The concurrence agrees; but it is also reported that because patents were not litigated in the common law courts until the Privy Council authorized such suits in 1752, judicial interpretation of various aspects of patent law were essentially absent until about the time this country achieved independence, leading to the variety of views expressed in Boulton v. Bull. The legislators in the new United States cannot now be assigned the straightjacket of law not yet developed in England. Indeed, the first patent granted by President Washington, upon examination by Secretary of State Jefferson, was for a method of "making Pot-ash and Pearl-ash," a process patent granted during the period that the concurrence states was fraught with English uncertainty about process patents. See The First United States Patent, 36 J.P.O.S. 615, 616-17 (1954).

The concurrence lists some English process patents predating the United States' 1793 Patent Act, and argues that processes not sufficiently "like" these archaic inventions should not now be eligible for patenting. I refer simply to Flook, 437 U.S. at 588 n. 9, 98 S.Ct. 2522, where the Court stated: "As in Benson, we assume that a valid process patent may issue even if it does not meet one of the qualifications of our earlier precedents." Similarly, the Chakrabarty Court stated: "[A] statute is not to be confined to the particular applications ... contemplated by the legislators. This is especially true in the field of patent law." Chakrabarty, 447 U.S. at 315-16, 100 S.Ct. 2204 (citing Barr v. United States, 324 U.S. 83, 90, 65 S.Ct. 522, 89 L.Ed. 765 (1945); Browder v. United States, 312 U.S. 335, 339, 61 S.Ct. 599, 85 L.Ed. 862 (1941); Puerto Rico v. Shell Co., 302 U.S. 253, 257, 58 S.Ct. 167, 82 L.Ed. 235 (1937)). The meaning of the statutory term "process" is not limited by particular examples from more than two hundred years ago.

However, I cannot resist pointing to the "business method" patents on Woodcroft's list. See concurring op. at 973 (citing No. 1197 to John Knox (July 21, 1778) ("Plan for assurances on lives of persons from 10 to 80 years of age.")). Several other process patents on Woodcroft's list appear to involve financial subject matter, and to require primarily human activity. See, e.g., No. 1170 to John Molesworth (Sept. 29, 1777) ("Securing to the purchasers of shares and chances of state-lottery tickets any prize drawn in their favor."); No. 1159 to William Nicholson (July 14, 1777) ("Securing the property of persons purchasing shares of State-lottery tickets."), cited in Bennet Woodcroft, Alphabetical Index of Patentees of Inventions 383, 410 (U.S. ed.1969). Other English process patents from the several decades following 1793 can aptly be described as "business methods," although not performed with the aid of computers. E.g., No. 10,367 to George Robert D'Harcourt (Oct. 29, 1844) ("Ascertaining and checking the number of checks or tickets which have been used and marked, applicable for railway officers.").

While most patents of an earlier era reflect the dominant mechanical and chemical technologies of that era, modern processes reflect the dramatic advances in telecommunications and computing that have occurred since the time of George III. See USPTO White Paper, Automated Financial or Management Data Processing Methods (Business Methods) 4 (2000), available at http://www.uspto.gov/web/menu/busmethp/ whitepaper.pdf (hereinafter USPTO White Paper) ("The full arrival of electricity as a component in business data processing system[s] was a watershed event."). It is apparent that economic, or "business method," or "human activity" patents were neither explicitly nor implicitly foreclosed from access to the English patent system.

Evolution of process patents in the United States

The United States' history of patenting establishes the same point. The PTO has located various patents predating modern computer usages that can be described as financial or business methods. The USPTO White Paper at 3-4 and appendix A describes the history of financial apparatus and method patents dating back to 1799, including patents on bank notes, bills of credit, bills of exchange, check blanks, detecting and preventing counterfeiting, coin counting, interest calculation tables, and lotteries, all within the first fifty years of the United States patent system. It is a distortion of these patents to describe the processes as "tied to" another statutory category-that is, paper and pencil. Concurring op. at 974-75 & n. 18. Replacement of paper with a computer screen, and pencil with electrons, does not "untie" the process. Fairly considered, the many older financial and business-oriented patents that the PTO and many of the amici have identified are of the same type as the Bilski claims; they were surely not rendered patent-eligible solely because they used "paper" to instantiate the financial strategies and transactions that comprised their contribution.

I do not disagree with the general suggestion that statutes intended to codify the existing common law are to be interpreted in light of then-contemporary practice, including, if relevant, the English cases. See concurring op. at 972-73. However, the court must be scrupulous in assessing the relevance of decisions that were formulated on particularized facts involving the technology of the period. The United States Supreme Court has never held that "process" inventions suffered a second-class status under our statutes, achieving patent eligibility only derivatively through an explicit "tie" to another statutory category. The Court has repeatedly disparaged efforts to read in restrictions not based on statutory language. See Diehr, 450 U.S. at 182, 101 S.Ct. 1048; Chakrabarty, 447 U.S. at 308, 100 S.Ct. 2204. Yet second-class status is today engrafted on "process" inventions. There is plainly no basis for such restriction, which is a direct path to the "gloomy thought" that concerned Senator O.H. Platt in his Remarks in Congress at the Centennial Proceedings of the United States Patent System:

> For one, I cannot entertain the gloomy thought that we have come to that century in the world's life in which new and grander achievements are impossible.... Invention is a prolific mother; every inventive triumph stimulates new effort. Man never is and never will be content with success, and the great secrets of nature are as yet largely undiscovered.

Invention and Advancement (1891), reprinted in United States Bicentennial Commemorative Edition of Proceedings and Addresses: Celebration of the Beginning of the Second Century of the American Patent System 75-76 (1990).

In sum, history does not support the retrogression sponsored by the concurrence.

This court now rejects its own CCPA and Federal Circuit precedent

The majority opinion holds that there is a Supreme Court restriction on process patents, "enunciated" in

Benson, Flook, and Diehr; and that this restriction was improperly ignored by the Federal Circuit and the Court of Customs and Patent Appeals, leading us into error which we must now correct. Thus this court announces that our prior decisions may no longer be relied upon. Maj. op. at 959-60 & nn. 17, 19. The effect on the patents and businesses that did rely on them is not considered.

The Court's decisions in Benson, Flook, and Diehr all reached the Supreme Court by way of the CCPA, and the CCPA successively implemented the Court's guidance in establishing the Freeman/Walter/Abele test for eligibility under Section 101. The Federal Circuit continued to consider computer-facilitated processes, as in Arrhythmia Research Technology, 958 F.2d at 1059-60, where patent-eligibility was confirmed for a computer-assisted mathematical analysis of electrocardiograph signals that determined the likelihood of recurrence of heart attack. This court now rules that this precedent "should no longer be relied on." Maj. op. at 959 n. 17.

In In re Alappat, 33 F.3d 1526 (Fed.Cir.1994) (en banc) the question was the eligibility for patent of a rasterizer that mathematically transforms data to eliminate aliasing in a digital oscilloscope. The court held that a computer-implemented system that produces a "useful, concrete, and tangible result" is Section 101 subject matter. Id. at 1544. This court now rules that "a 'useful, concrete and tangible result' analysis should no longer be relied on." Maj. op. at 960 n. 19.

The Alappat court stressed the intent, embodied in the language of the statute, that the patent system be broadly available to new and useful inventions:

> The use of the expansive term "any" in § 101 represents Congress's intent not to place any restrictions on the subject matter for which a patent may be obtained beyond those specifically recited in § 101 and other parts of Title 35.

33 F.3d at 1542. This court looked to the Supreme Court's guidance in its Section 101 decisions, and explained:

> A close analysis of Diehr, Flook, and Benson reveals that the Supreme Court never intended to create an overly broad, fourth category of [mathematical] subject matter excluded from § 101. Rather, at the core of the Court's analysis in each of these cases lies an attempt by the Court to explain a rather straightforward concept, namely, that certain types of mathematical subject matter, standing alone, represent nothing more than abstract ideas until reduced to some type of practical application, and thus that subject matter is not, in and of itself, entitled to patent protection.

Id. at 1543 (emphasis in original). The court cited the Supreme Court's distinction between abstract ideas and their practical application, and stated of the claimed rasterizer: "This is not a disembodied mathematical concept which may be characterized as an 'abstract idea,' but rather a specific machine to produce a useful, concrete, and tangible result." Id. at 1544.

This principle was applied to a computer-implemented data processing system for managing pooled mutual fund assets in State Street Bank & Trust Co. v. Signature Financial Group, Inc., 149 F.3d 1368 (Fed.Cir.1998), and to a method for recording and processing telephone data in AT&T v. Excel. The court explained that processes that include mathematical calculations in a practical application can produce a useful, concrete, and tangible result, which in State Street Bank was "expressed in numbers, such as price, profit, percentage, cost, or loss." 149 F.3d at 1375. In AT&T v. Excel the court applied State Street Bank and Diehr, and stated that "physical transformation ... is not an invariable requirement, but merely one example of how a mathematical algorithm may bring about a useful application" and thus achieve a useful, concrete, and tangible result. 172 F.3d at 1358. This analysis, too, can no longer be relied on. Maj. op. at 960 n. 19.

The now-discarded criterion of a "useful, concrete, and tangible result" has proved to be of ready and comprehensible applicability in a large variety of processes of the information and digital ages. The court in State Street Bank reinforced the thesis that there is no reason, in statute or policy, to exclude computer-implemented and information-based inventions from access to patentability. The holdings and reasoning of Alappat and State Street Bank guided the inventions of the electronic age into the patent system, while remaining faithful to the Diehr distinction between abstract ideas such as mathematical formulae and their application in a particular process for a specified purpose. And patentability has always required compliance with all of the requirements of the statute, including novelty, non-obviousness, utility, and the provisions of Section 112.

The public has relied on the rulings of this court and of the Supreme Court

The decisions in Alappat and State Street Bank confirmed the patent eligibility of many evolving areas of commerce, as inventors and investors explored new technological capabilities. The public and the economy have experienced extraordinary advances in information-based and computer-managed processes, supported by an enlarging patent base. The PTO reports that in Class 705, the examination classification associated with "business methods" and most likely to receive inventions that may not use machinery or transform physical matter, there were almost 10,000 patent applications filed in FY 2006 alone, and over 40,000 applications filed since FY 98 when State Street Bank was decided. See Wynn W. Coggins, USPTO, Update on Business Methods for the Business Methods Partnership Meeting 6 (2007) (hereinafter "PTO Report"), available at http://www.uspto.gov/web/menu/pbmethod/partnership.pps. An amicus in the present case reports that over 15,000 patents classified in Class 705 have issued. See Br. of Amicus Curiae Accenture, at 22 n.20.[4] The industries identified with information-based and data-handling processes, as several amici curiae explain and illustrate, include fields as diverse as banking and finance, insurance, data processing, industrial engineering, and medicine.

Stable law, on which industry can rely, is a foundation of commercial advance into new products and processes. Inventiveness in the computer and information services fields has placed the United States in a position of technological and commercial preeminence. The information technology industry is reported to be "the key factor responsible for reversing the 20-year productivity slow-down from the mid-1970s to the mid-1990s and in driving today's robust productivity growth." R.D. Atkinson & A.S. McKay, Digital Prosperity: Understanding the Economic Benefits of the Information Technology Revolution 10 (Info. Tech. & Innovation Found.2007), available at http://www.itif.org/files/digital_prosperity.pdf. By revenue estimates, in 2005 the software and information sectors constituted the fourth largest industry in the United States, with significantly faster growth than the overall U.S. economy. Software & Info. Indus. Ass'n, Software and Information: Driving the Knowledge Economy 7-8 (2008), http://www.siia.net/estore/globecon-08.pdf. A Congressional Report in 2006 stated:

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[4] The PTO recognizes that patents on "business methods" have been eligible subject matter for two centuries. See USPTO White Paper 2 ("Financial patents in the paper-based technologies have been granted continuously for over two hundred years.").

> As recently as 1978, intangible assets, such as intellectual property, accounted for 20 percent of corporate assets with the vast majority of value (80 percent) attributed to tangible assets such as facilities and equipment. By 1997, the trend reversed; 73 percent of corporate assets were intangible and only 27 percent were tangible.

H.R.Rep. No. 109-673 (accompanying a bill concerning judicial resources).

This powerful economic move toward "intangibles" is a challenge to the backward-looking change of this court's ruling today. Until the shift represented by today's decision, statute and precedent have provided stability in the rapidly moving and commercially vibrant fields of the Information Age. Despite the economic importance of these interests, the consequences of our decision have not been considered. I don't know how much human creativity and commercial activity will be devalued by today's change in law; but neither do my colleagues.

The Section 101 interpretation that is now uprooted has the authority of years of reliance, and ought not be disturbed absent the most compelling reasons. "Considerations of stare decisis have special force in the area of statutory interpretation, for here, unlike in the context of constitutional interpretation, the legislative power is implicated, and Congress remains free to alter what [the courts] have done." Shepard v. United States, 544 U.S. 13, 23, 125 S.Ct. 1254, 161 L.Ed.2d 205 (2005) (quoting Patterson v. McLean Credit Union, 491 U.S. 164, 172-73, 109 S.Ct. 2363, 105 L.Ed.2d 132 (1989)); see also Hilton v. S.C. Pub. Railways Comm'n, 502 U.S. 197, 205, 112 S.Ct. 560, 116 L.Ed.2d 560 (1991) (in cases of statutory interpretation the importance of adhering to prior rulings is "most compelling"). Where, as here, Congress has not acted to modify the statute in the many years since Diehr and the decisions of this court, the force of stare decisis is even stronger. See Shepard, 544 U.S. at 23, 125 S.Ct. 1254.

Adherence to settled law, resulting in settled expectations, is of particular importance "in cases involving property and contract rights, where reliance interests are involved." Payne v. Tennessee, 501 U.S. 808, 828, 111 S.Ct. 2597, 115 L.Ed.2d 720 (1991); see also United States v. Title Ins. & Trust Co., 265 U.S. 472, 486, 44 S.Ct. 621, 68 L.Ed. 1110 (1924) (declining to overrule precedent where prior ruling "has become a rule of property, and to disturb it now would be fraught with many injurious results"). This rationale is given no weight by my colleagues, as this court gratuitously disrupts decades of law underlying our own rulings. The only announced support for today's change appears to be the strained new reading of Supreme Court quotations. But this court has previously read these decades-old opinions differently, without objection by either Congress or the Court. My colleagues do not state a reason for their change of heart. See Benjamin N. Cardozo, The Nature of the Judicial Process 149 (1921) ("[T]he labor of judges would be increased almost to the breaking point if every past decision could be reopened in every case, and one could not lay one's own course of bricks on the secure foundation of the courses laid by others who had gone before him.").

It is the legislature's role to change the law if the public interest so requires. In Chakrabarty the Court stated: "The choice we are urged to make is a matter of high policy for resolution within the legislative process after the kind of investigation, examination, and study that legislative bodies can provide and courts cannot." 447 U.S. at 317, 100 S.Ct. 2204; see also Flook, 437 U.S. at 595, 98 S.Ct. 2522 ("Difficult questions of policy concerning the kinds of programs that may be appropriate for patent protection and the form and duration of such protection can be answered by Congress on the basis of current empirical data not equally available to this tribunal.").

It is, however, the judicial obligation to assure a correct, just, and reliable judicial process, and particularly to respect the principles of stare decisis in an area in which prior and repeated statutory interpretations have been relied upon by others. See, e.g., Shepard, 544 U.S. at 23, 125 S.Ct. 1254 ("[T]he claim to adhere to case law is generally powerful once a decision has settled statutory meaning."); Hilton, 502 U.S. at 202, 112 S.Ct. 560 ("Adherence to precedent promotes stability, predictability, and respect for judicial authority."); Payne, 501 U.S. at 827, 111 S.Ct. 2597 ("Stare decisis is the preferred course because it promotes the evenhanded, predictable, and consistent development of legal principles, fosters reliance on judicial decisions, and contributes to the actual and perceived integrity of the judicial process."). These considerations appear to be abandoned.

Uncertain guidance for the future

Not only past expectations, but future hopes, are disrupted by uncertainty as to application of the new restrictions on patent eligibility. For example, the court states that even if a process is "tied to" a machine or transforms matter, the machine or transformation must impose "meaningful limits" and cannot constitute "insignificant extra-solution activity". Maj. op. at 961-62. We are advised that transformation must be "central to the purpose of the claimed process," id., although we are not told what kinds of transformations may qualify, id. at 962-63. These concepts raise new conflicts with precedent.

This court and the Supreme Court have stated that "there is no legally recognizable or protected 'essential' element, 'gist' or 'heart' of the invention in a combination patent." Allen Eng'g Corp. v. Bartell Industries, Inc., 299 F.3d 1336, 1345 (Fed.Cir.2002) (quoting Aro Mfg. Co. v. Convertible Top Replacement Co., 365 U.S. 336, 345, 81 S.Ct. 599, 5 L.Ed.2d 592 (1961)). This rule applies with equal force to process patents, see W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 1548 (Fed.Cir.1983) (there is no gist of the invention rule for process patents), and is in accord with the rule that the invention must be considered as a whole, rather than "dissected," in assessing its patent eligibility under Section 101, see Diehr, 450 U.S. at 188, 101 S.Ct. 1048. It is difficult to predict an adjudicator's view of the "invention as a whole," now that patent examiners and judges are instructed to weigh the different process components for their "centrality" and the "significance" of their "extra-solution activity" in a Section 101 inquiry.

As for whether machine implementation will impose "meaningful limits in a particular case," the "meaningfulness" of computer usage in the great variety of technical and informational subject matter that is computer-facilitated is apparently now a flexible parameter of Section 101. Each patent examination center, each trial court, each panel of this court, will have a blank slate on which to uphold or invalidate claims based on whether there are sufficient "meaningful limits", or whether a transformation is adequately "central," or the "significance" of process steps. These qualifiers, appended to a novel test which itself is neither suggested nor supported by statutory text, legislative history, or judicial precedent, raise more questions than they answer. These new standards add delay, uncertainty, and cost, but do not add confidence in reliable standards for Section 101.

Other aspects of the changes of law also contribute uncertainty. We aren't told when, or if, software instructions implemented on a general purpose computer are deemed "tied" to a "particular machine," for if Alappat's guidance that software converts a general purpose computer into a special purpose machine remains applicable, there is no need for the present ruling. For the thousands of inventors who obtained patents under the court's now-discarded criteria, their property rights are now vulnerable.

The court also avoids saying whether the State Street Bank and AT&T v. Excel inventions would pass the new test. The drafting of claims in machine or process form was not determinative in those cases, for "we consider the scope of § 101 to be the same regardless of the form-machine or process-in which a particular claim is drafted." AT&T v. Excel, 172 F.3d at 1357. From either the machine or the transformation viewpoint, the processing of data representing "price, profit, percentage, cost, or loss" in State Street Bank is not materially different from the processing of the Bilski data representing commodity purchase and sale prices, market trans-actions, and risk positions; yet Bilski is held to fail our new test, while State Street is left hanging. The uncertainty is illustrated in the contemporaneous decision of In re Comiskey, 499 F.3d 1365, 1378-79 (Fed.Cir.2007), where the court held that "systems that depend for their operation on human intelligence alone" to solve practical problems are not within the scope of Section 101; and In re Nuijten, 500 F.3d 1346, 1353-54 (Fed.Cir.2007), where the court held that claims to a signal with an embedded digital watermark encoded according to a given encoding process were not directed to statutory subject matter under Section 101, although the claims included "physical but transitory forms of signal transmission such as radio broadcasts, electrical signals through a wire, and light pluses through a fiber-optic cable."

Although this uncertainty may invite some to try their luck in court, the wider effect will be a disincentive to innovation-based commerce. For inventors, investors, competitors, and the public, the most grievous consequence is the effect on inventions not made or not developed because of uncertainty as to patent protection. Only the successes need the patent right.

The Bilski invention has not been examined for patentability

To be patentable, Bilski's invention must be novel and non-obvious, and the specification and claims must meet the requirements of enablement, description, specificity, best mode, etc. See 35 U.S.C. § 101 ("Whoever invents or discovers a new and useful process ... may obtain a patent therefor, subject to the conditions and requirements of this title."); Diehr, 450 U.S. at 190, 101 S.Ct. 1048 (the question of whether an invention is novel is distinct from whether the subject matter is statutory); State Street Bank, 149 F.3d at 1377 ("Whether the patent's claims are too broad to be patentable is not to be judged under § 101, but rather under §§ 102, 103, and 112."). I don't know whether Bilski can meet these requirements—but neither does this court, for the claims have not been examined for patentability, and no rejections apart from Section 101 are included in this appeal.

Instead, the court states the "true issue before us" is "whether Applicants are seeking to claim a fundamental principle (such as an abstract idea) or mental process," maj. op. at 952, and answers "yes." With respect, that is the wrong question, and the wrong answer. Bilski's patent application describes his process of analyzing the effects of supply and demand on commodity prices and the use of a coupled transaction strategy to hedge against these risks; this is not a fundamental principle or an abstract idea; it is not a mental process or a law of nature. It is a "process," set out in successive steps, for obtaining and analyzing information and carrying out a series of commercial transactions for the purpose of "managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price." Claim 1, preamble.

Because the process Bilski describes employs complex mathematical calculations to assess various elements of risk, any practicable embodiment would be conducted with the aid of a machine—a programmed computer-but the court holds that since computer-implementation is not recited in claim 1, for that reason alone the process fails the "machine" part of the court's machine-or-transformation test. Maj. op. at 962. And the court holds that since Bilski's process involves the processing of data concerning commodity prices and supply and demand and other risk factors, the process fails the "transformation" test because no "physical objects or substances" are transformed. Maj. op. at 963-64. The court then concludes that because Bilski's Claim 1 fails the machine-or-transformation test it ipso facto preempts a "fundamental principle" and is thereby barred from the patent system under Section 101: an illogical leap that displays the flaws in the court's analysis.

If a claim is unduly broad, or if it fails to include sufficient specificity, the appropriate ground of rejection is Section 112, for claims must "particularly point out and distinctly claim[ ]" the invention. See In re Vaeck, 947 F.2d 488, 495-96 (Fed. Cir. 1991) (affirming rejection under Section 112 where "[t]here is no reasonable correlation between the narrow disclosure in applicant's specification and the broad scope of protection sought in the claims"); In re

Foster, 58 C.C.P.A. 1001, 438 F.2d 1011, 1016 (1971) (claims "not commensurate with appellants' own definition of what they are seeking to cover" are rejected under Section 112, rather than Section 101); In re Prater, 415 F.2d at 1403-04 (applying Section 112 to claims that included mental steps). The filing of a broader claim than is supported in the specification does not convert the invention into an abstraction and evict the application from eligibility for examination. A broad first claim in a patent application is routine; it is not the crisis event postulated in the court's opinion.

The role of examination is to determine the scope of the claims to which the applicant is entitled. See 37 C.F.R. § 1.104(a). The PTO's regulations provide:

> On taking up an application for examination or a patent in a reexamination proceeding, the examiner shall make a thorough study thereof and shall make a thorough investigation of the avail-able prior art relating to the subject matter of the claimed invention. The examination shall be complete with respect to both compliance of the application or patent under reexamination with the applicable statutes and rules and to the patentability of the invention as claimed, as well as with respect to matters of form, unless otherwise indicated.

Id. § 1.104(a)(1). The Manual of Patent Examining Procedure (MPEP) similarly instructs the examiners to conduct a "thorough search of the prior art" before evaluating the invention under Section 101. MPEP § 2106(III) (8th ed., rev.7, July.2008) ("Prior to evaluating the claimed invention under 35 U.S.C. § 101, USPTO personnel are expected to conduct a thorough search of the prior art."). The MPEP also requires examiners to identify all grounds of rejection in the first official PTO action to avoid unnecessary delays in examination. Id.§ 2106(II) ("Under the principles of compact prosecution, each claim should be reviewed for compliance with every statutory requirement for patentability in the initial review of the application, even if one or more claims are found to be deficient with respect to some statutory requirement."). I note that this requirement does not appear to have been here met.

Several amici curiae referred to the difficulties that the PTO has reported in examining patents in areas where the practice has been to preserve secrecy, for published prior art is sparse. The Federal Trade Commission recognized that the problem of "questionable" patents stems mostly from "the difficulty patent examiners can have in considering all the relevant prior art in the field and staying informed about the rapid advance of computer science." FTC, To Promote Innovation: The Proper Balance of Competition & Patent Law and Policy at ch. 3, pp. 44 (Oct.2003), available at http://www.ftc.gov/os/2003/10/innovationrpt.pdf. However, this problem seems to be remedied, for the PTO reported in 2007 that for Class 705, "[t]he cases the examiners are now working on have noticeably narrower claims" than the cases filed in or before FY 2000. PTO Report at 9. The PTO reports that its search fields have been enlarged, staff added, and supervision augmented. FTC Report at ch. 1, p. 30. ("Since the PTO introduced [these changes] the allowance rate for business method patents has decreased, and the PTO believes that this decreased allowance rate indicates improved PTO searches for prior art."). If this court's purpose now is to improve the quality of issued patents by eliminating access to patenting for large classes of past, present, and future inventions, the remedy would appear to be excessive.

A straightforward, efficient, and ultimately fair approach to the evaluation of "new and useful" processes-quoting Section 101-is to recognize that a process invention that is not clearly a "fundamental truth, law of nature, or abstract idea" is eligible for examination for patentability. I do not suggest that basic scientific discoveries are a proper subject matter of patents (the Court in Chakrabarty mentioned $E=mc^2$ and the law of gravity), and I do not attempt an all-purpose definition of the boundary between scientific theory and technological application. But it is rare indeed that a question arises at the boundary of basic science; more usual is the situation illustrated by Samuel Morse's telegraph, in which the Court simply held that Morse's general claim was "too broad," exceeding the scope of his practical application.

Bilski's process for determining risk in commodity transactions does not become an abstraction because it is broadly claimed in his first claim. It may be claimed so broadly that it reads on the prior art, but it is neither a fundamental truth nor an abstraction. Bilski's ten other claims contain further details and limitations, removing them farther from abstraction. Although claim 1 may have been deemed "representative" with respect to Section 101, the differences among the claims may be significant with respect to Sections 102, 103, and 112. Bilski's application, now pending for eleven years, has yet to be examined for patentability.

CONCLUSION

In sum, the text of Section 101, its statutory history, its interpretation by the Supreme Court, and its application by the courts, contravene this court's redefinition of the statutory term "process." The court's decision affects present and future rights and incentives, and usurps the legislative role. The judicial role is to support stability and predictability in the law, with fidelity to statute and precedent, and respect for the principles of stare decisis.

Patents provide an incentive to invest in and work in new directions. In United States v. Line Material Co., 333 U.S. 287, 332, 68 S.Ct. 550, 92 L.Ed. 701 (1948), Justice Burton, joined by Chief Justice Vinson and Justice Frankfurter, remarked that "the frontiers of science have expanded until civilization now depends largely upon discoveries on those frontiers to meet the infinite needs of the future. The United States, thus far, has taken a leading part in making those discoveries and in putting them to use." This remains true today. It is antithetical to this incentive to restrict eligibility for patenting to what has been done in the past, and to foreclose what might be done in the future.

MAYER, Circuit Judge, dissenting.

The en banc order in this case asked: "Whether it is appropriate to reconsider State Street Bank & Trust Co. v. Signature Financial Group, Inc., 149 F.3d 1368 (Fed.Cir.1998), and AT&T Corp. v. Excel Communications, Inc., 172 F.3d 1352 (Fed.Cir.1999), in this case and, if so, whether those cases should be overruled in any respect?" I would answer that question with an emphatic "yes." The patent system is intended to protect and promote advances in science and technology, not ideas about how to structure commercial transactions. Claim 1 of the application of Bernard L. Bilski and Rand A. Warsaw ("Bilski") is not eligible for patent protection because it is directed to a method of conducting business. Affording patent protection to business methods lacks constitutional and statutory support, serves to hinder rather than promote innovation and usurps that which rightfully belongs in the public domain. State Street and AT & T should be overruled.

I.

In discussing the scope of copyright protection, the Supreme Court has noted that "'a page of history is worth a volume of logic.'" Eldred v. Ashcroft, 537 U.S. 186, 200, 123 S.Ct. 769, 154 L.Ed.2d 683 (2003) (quoting New York Trust Co. v. Eisner, 256 U.S. 345, 349, 41 S.Ct. 506, 65 L.Ed. 963 (1921)). The same holds true with respect to patent protection. From a historical perspective, it is highly unlikely that the framers of the Constitution's intellectual property clause intended to grant patent protection to methods of conducting business. To the contrary, "those who formulated the Constitution were familiar with the long struggle over monopolies so prominent in English history, where exclusive rights to engage even in ordinary business activities were granted so frequently by the Crown for the financial benefits accruing to the Crown only." In re Yuan, 38 C.C.P.A. 967, 188 F.2d 377, 380 (1951). The Statute of Monopolies,[1] enacted in 1624, curtailed the Crown's ability to grant "monopolies to court favorites in goods or businesses which had long before been enjoyed by the public." Graham v. John Deere Co., 383 U.S. 1, 5, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966). When drafting the Constitution, the framers were well aware of the abuses that led to the English Statute of Monopolies and therefore "consciously acted to bar Congress from granting letters patent in particular types of business." In re Comiskey, 499 F.3d 1365, 1375 (Fed.Cir.2007); see also Malla Pollack, The Multiple Unconstitutionality of Business Method Patents: Common Sense, Congressional Consideration, and Constitutional History, 28 Rutgers Computer & Tech. L.J. 61, 90 (2002) ("[T]he ratifying generation did not agree to invention patents on advances in trade itself, because trade monopolies were odious.").

There is nothing in the early patent statutes to indicate that Congress intended business methods to constitute patentable subject matter. See Patent Act of 1790 § 4, 1 Stat. 109, 111 (1790); Patent Act of 1793 § 1, 1 Stat. 318, 319 (1793); Pollack, supra at 106 ("[I]f any nation was ripe for invention patents on business methods, it was the newly freed colonies of

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[1] The Statute of Monopolies "grew out of abuses in the grant of exclusive franchises in various lines of business such as trading cards, alehouses and various staple products." Robert P. Merges, As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform, 14 Berkeley Tech. L.J. 577, 585 (1999).

British North America.... [H]owever, no business method patents seem to have been granted."). As early as 1869, the Commissioner of Patents said that "[i]t is contrary ... to the spirit of the law, as construed by the office for many years, to grant patents for methods of book-keeping," Ex parte Abraham, 1869 Dec. Comm'r Pat. 59, 59 (1869), and by 1893 the courts had concluded that "a method of transacting common business ... does not seem to be patentable as an art," United States Credit Sys. Co. v. Am. Credit Indem. Co., 53 F. 818, 819 (C.C.S.D.N.Y.1893), aff'd on other grounds, 59 F. 139 (2d Cir.1893). By 1952, when Congress enacted the current Patent Act, it was widely acknowledged that methods of doing business were ineligible for patent protection. See, e.g., Loew's Drive-In Theatres, Inc. v. Park-In Theatres, Inc., 174 F.2d 547, 552 (1st Cir.1949) ("[A] system for the transaction of business ... however novel, useful, or commercially successful is not patentable apart from the means for making the system practically useful, or carrying it out."); In re Patton, 29 C.C.P.A. 982, 127 F.2d 324 (1942) (noting that "a system of transacting business, apart from the means for carrying out such system" is not patentable); Hotel Sec. Checking Co. v. Lorraine Co., 160 F. 467, 469 (2d Cir.1908) ("A system of transacting business disconnected from the means for carrying out the system is not, within the most liberal interpretation of the term, an art."); In re Moeser, 27 App. D.C. 307, 310 (1906) (holding that a system for burial insurance contracts was not patentable because "contracts or proposals for contracts, devised or adopted as a method of transacting a particular class of ... business, [are] not patentable as an art"); see also 145 Cong. Rec. H6,947 (Aug. 3, 1999) (statement of Rep. Manzullo) ("Before the State

Street Bank and Trust case ... it was universally thought that methods of doing or conducting business were not patentable items.").

In passing the 1952 Act, Congress reenacted statutory language that had long existed,[2] thus signaling its intent to carry forward the body of case law that had developed under prior versions of the statute. Because there is nothing in the language of the 1952 Act, or its legislative history, to indicate that Congress intended to modify the rule against patenting business methods, we must presume that no change in the rule was intended. See, e.g., Astoria Fed. Sav. & Loan Ass'n v. Solimino, 501 U.S. 104, 108, 111 S.Ct. 2166, 115 L.Ed.2d 96 (1991) ("[W]here a common-law principle is well established ... the courts may take it as given that Congress has legislated with an expectation that the principle will apply except when a statutory purpose to the contrary is evident."(citations and internal quotation marks omitted)); Isbrandtsen Co. v. Johnson, 343 U.S. 779, 783, 72 S.Ct. 1011, 96 L.Ed. 1294 (1952) ("Statutes which invade the common law ... are to be read with a presumption favoring the retention of long-established and familiar principles, except when a statutory purpose to the contrary is evident."); see also In re Schrader, 22 F.3d 290, 295 (Fed.Cir.1994) ("When Congress approved the addition of the term 'process' to the categories of patentable subject matter in 1952, it incorporated the definition of 'process' that had evolved in the courts."(footnote omitted)). If

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[2] Congress did substitute the word "process" for "art" in the 1952 Act, but "[a]nalysis of the eligibility of a claim of patent protection for a 'process' did not change with the addition of that term to § 101." Diamond v. Diehr, 450 U.S. 175, 184, 101 S.Ct. 1048, 67 L.Ed.2d 155 (1981).

Congress had wished to change the established practice of disallowing patents on business methods, it was quite capable of doing so explicitly. See Parker v. Flook, 437 U.S. 584, 596, 98 S.Ct. 2522, 57 L.Ed.2d 451 (1978) (stressing that courts "must proceed cautiously when ... asked to extend patent rights into areas wholly unforeseen by Congress").

State Street's decision to jettison the prohibition against patenting methods of doing business contravenes congressional intent. Because (1) "the framers consciously acted to bar Congress from granting letters patent in particular types of business," Comiskey, 499 F.3d at 1375, and (2) Congress evidenced no intent to modify the long-established rule against business method patents when it enacted the 1952 Patent Act, it is hard to fathom how the issuance of patents on business methods can be supported.

II.

Business method patents have been justified, in significant measure, by a misapprehension of the legislative history of the 1952 Patent Act. In particular, proponents of such patents have asserted that the Act's legislative history states that Congress intended statutory subject matter to "include anything under the sun that is made by man." AT & T, 172 F.3d at 1355 (Fed.Cir.1999) (citations and internal quotation marks omitted); see also Diamond v. Chakrabarty, 447 U.S. 303, 309, 100 S.Ct. 2204, 65 L.Ed.2d 144 (1980). Read in context, however, the legislative history says no such thing. The full statement from the committee report reads: "A person may have 'invented' a machine or a manufacture, which may include anything under the sun that is made by man, but it is not necessarily patentable under section 101 unless the conditions of the title are fulfilled." S.Rep. No.1979, 82d Cong., 2d Sess. 5 (1952), U.S.Code Cong. & Admin.News 1952, pp. 2394, 2399 (emphasis added); H.R.Rep. No.1923, 82d Cong., 2d Sess. 6 (1952) (emphasis added).

This statement does not support the contention that Congress intended "anything under the sun" to be patentable. To the contrary, the language supports the opposite view: a person may have "invented" anything under the sun, but it is "not necessarily patentable" unless the statutory requirements for patentability have been satisfied. Thus, the legislative history oft-cited to support business method patents undercuts, rather than supports, the notion that Congress intended to extend the scope of section 101 to encompass such methods.

Moreover, the cited legislative history is not discussing process claims at all. The quoted language is discussing "machines" and "manufactures;" it is therefore surprising that it has been thought a fit basis for allowing patents on business processes.

III.

The Constitution does not grant Congress unfettered authority to issue patents. See U.S. Const. art. I, § 8.[3] Instead, the patent power is a "qualified authority ... [which] is limited to the promotion of advances in the 'useful arts.'" Graham, 383 U.S. at 5,

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[3] Article I, § 8 provides that "The Congress shall have Power ... To promote the Progress of Science and useful Arts by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." The patent power "is the only one of the several powers conferred upon the Congress which is accompanied by a specific statement of the reason for it." Yuan, 188 F.2d at 380.

86 S.Ct. 684; *see also* *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 127 S.Ct. 1727, 1746, 167 L.Ed.2d 705 (2007) (reaffirming that patents are designed to promote "the progress of useful arts"). What the framers described as "useful arts," we in modern times call "technology." *Paulik v. Rizkalla*, 760 F.2d 1270, 1276 (Fed.Cir.1985) (en banc). Therefore, by mandating that patents advance the useful arts, "[t]he Constitution explicitly limited patentability to ... 'the process today called technological innovation.'" *Comiskey*, 499 F.3d at 1375 (quoting *Paulik*, 760 F.2d at 1276); *see also* *In re Foster*, 58 C.C.P.A. 1001, 438 F.2d 1011 (1971) ("All that is necessary ... to make a sequence of operational steps a statutory 'process' within 35 U.S.C. § 101 is that it be in the technological arts."); Karl B. Lutz, *Patents and Science: A Clarification of the Patent Clause of the U.S. Constitution*, 18 Geo. Wash. L.Rev. 50, 54 (1949) ("The term 'useful arts' as used in the Constitution ... is best represented in modern language by the word 'technology.'"); James S. Sfekas, *Controlling Business Method Patents: How the Japanese Standard for Patenting Software Could Bring Reasonable Limitations to Business Method Patents in the United States*, 16 Pac. Rim. L. & Pol'y J. 197, 214 (2007) (At the time the Patent Clause was adopted, "the term 'useful arts' was commonly used in contrast to the ideas of the 'liberal arts' and the 'fine arts,' which were well-known ideas in the eighteenth century.").

Before *State Street* led us down the wrong path, this court had rightly concluded that patents were designed to protect technological innovations, not ideas about the best way to run a business.[4] We had

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[4] "[D]espite the assertions in *State Street* and *Schrader*, very few in the patent community believe that business methods

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have always been patentable. To the contrary, the dominant view is that the law has changed, and that the definition of patentable subject matter is now wider than it once was." R. Carl Moy, *Subjecting Rembrandt to the Rule of Law: Rule-Based Solutions for Determining the Patentability of Business Methods*, 28 Wm. Mitchell L.Rev. 1047, 1060 (2002) (footnotes omitted); *see also* Rochelle Cooper Dreyfuss, *Are Business Method Patents Bad for Business?*, 16 Santa Clara Computer & High Tech. L.J. 263, 265-66 (2000) (*State Street* gave "judicial recognition to business method patents."). Over the course of two centuries, a few patents issued on what could arguably be deemed methods of doing business, *see, e.g.*, U.S. Patent No. 5,664,115 ("Inter-active Computer System to Match Buyers and Sellers of Real Estate, Businesses and Other Property Using the Internet"), but these patents were aberrations and the general rule, prior to *State Street*, was that methods of engaging in business were ineligible for patent protection. *See Comiskey*, 499 F.3d at 1374 (noting that "[a]t one time, '[t]hough seemingly within the category of process or method, a method of doing business [was] rejected as not being within the statutory classes.'" (quoting *State Street*, 149 F.3d at 1377)). One commentator has noted that although the United States Patent and Trademark Office ("USPTO") "in an attempt to deflect criticism [has] issued an apologia ... asserting that business method patents are as old as the United States patent system," this document is fundamentally flawed. *See* Pollack, *supra* at 73-75. She explains:

> The USPTO wants us to believe that it found no records of patents whose points of invention were business methods, because no one had time to invent any new business methods until the human race had run its mechanical ingenuity to the peak of computer software; seemingly we were all too busy inventing the computer to think about anything else-especially new ways of doing business. I thought that we granted patents because, otherwise, people would be too busy making money by running businesses to take time out to invent anything except business methods. The USPTO [document], furthermore, is eliding the printed matter exception to patentable subject matter with the business method exception.

Id. at 75 (footnote omitted).

thus rejected as unpatentable a method for coordinating firefighting efforts, Patton, 127 F.2d at 326-27, a method for deciding how salesmen should best handle customers, In re Maucorps, 609 F.2d 481 (CCPA 1979), and a computerized method for aiding a neurologist in diagnosing patients, In re Meyer, 688 F.2d 789 (CCPA 1982).[5] We stated that patentable pro-cesses must "be in the technological arts so as to be in consonance with the Constitutional purpose to pro-mote the progress of 'useful arts.'" In re Musgrave, 57 C.C.P.A. 1352, 431 F.2d 882, 893 (CCPA 1970) (emphasis added).

Business method patents do not promote the "useful arts" because they are not directed to any technological or scientific innovation. Although business method applications may use technology—such as computers—to accomplish desired results, the innovative aspect of the claimed method is an entrepreneurial rather than a technological one. Thus, although Bilski's claimed hedging method could theoretically be implemented on a computer, that alone does not render it patentable. See Diehr, 450 U.S. at 192 n. 14, 101 S.Ct. 1048 (Patentability cannot be established by the "token" use of technology.); Gottschalk v. Benson, 409 U.S. 63, 64-66, 93 S.Ct. 253, 34 L.Ed.2d 273 (1972) (finding unpatentable a method of programming a general purpose digital computer to convert signals from binary-coded decimal to pure binary form). Where a claimed business method simply uses a known machine to do what it was designed to do, such as using a computer to gather data or perform calculations, use of that machine will not bring otherwise unpatentable subject matter within the ambit of section 101. See Benson, 409 U.S. at 67, 93 S.Ct. 253 (finding a process unpatentable where "[t]he mathematical procedures [could] be carried out in existing computers long in use, no new machinery being necessary").

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[5] The claims in Patton were explicitly rejected on the basis that they were directed to a business method, while the claims in Maucorps and Meyer were rejected as attempts to patent mathematical algorithms. Subsequently, however, this court stated that the claimed processes in Maucorps and Meyer were directed toward business systems and should therefore not be considered patent eligible. In re Alappat, 33 F.3d 1526, 1541 (Fed.Cir.1994) (en banc). We noted that " Maucorps dealt with a business methodology for deciding how salesmen should best handle respective customers and Meyer involved a 'system' for aiding a neurologist in diagnosing patients. Clearly, neither of the alleged 'inventions' in those cases falls within any § 101 category." Id.

Although the Supreme Court has not directly addressed the patentability of business methods, several of its decisions implicitly tether patentability to technological innovation. See Pfaff v. Wells Elecs., Inc., 525 U.S. 55, 63, 119 S.Ct. 304, 142 L.Ed.2d 261 (1998) ("[T]he patent system represents a carefully crafted bargain that encourages both the creation and the public disclosure of new and useful advances in technology, in return for an exclusive monopoly for a limited period of time."(emphasis added)); Markman v. Westview Instruments, Inc., 517 U.S. 370, 390, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996) ("Congress created the Court of Appeals for the Federal Circuit as an exclusive appellate court for patent cases ... observing that increased uniformity would strengthen the United States patent system in such a way as to foster technological growth and industrial innovation."(citations and internal quotation marks omitted) (emphasis added)); Benson, 409 U.S. at 71, 93 S.Ct. 253 (refusing to "freeze [the patentability of] process patents to old technologies, leaving no room for the revelations of the new, onrushing technology " (emphases added)). Indeed, the Supreme Court has repeatedly emphasized that what renders subject matter patentable is "the application of the law of nature to a new and useful end." Funk Bros. Seed Co. v. Kalo Inoculant Co., 333 U.S. 127, 130, 68 S.Ct. 440, 92 L.Ed. 588 (1948); see Diehr, 450 U.S. at 188 n. 11, 101 S.Ct. 1048; Benson, 409 U.S. at 67, 93 S.Ct. 253.[6] Applying laws of nature to new and useful ends is nothing other than "technology."[7] See, e.g., Microsoft Computer Dictionary 513 (5th ed. 2002) (The definition of "technology" is the "application of science and engineering to the development of machines and procedures in order to enhance or improve human conditions."); American

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[6] Laws of nature are those laws pertaining to the "natural sciences," such as biology, chemistry, or physics. See, e.g., Webster's New International Dictionary 1507 (3d ed. 2002) ("Natural sciences" are the "branches of science ([such] as physics, chemistry, [or] biology) that deal with matter, energy, and their interrelations and transformations or with objectively measured phenomena."). They must be distinguished from other types of law, such as laws of economics or statutory enactments. Laws of nature do not involve "judgments on human conduct, ethics, morals, economics, politics, law, aesthetics, etc." Musgrave, 431 F.2d at 890; see also Joy Y. Xiang, How Wide Should the Gate of "Technology" Be? Patentability of Business Methods in China, 11 Pac. Rim L. & Pol'y J. 795, 807 (2002) (noting that State Street's" 'useful, concrete and tangible result' test is inconsistent with the 'application of the law of nature' patent eligibility scope outlined by the U.S. Supreme Court and [the Federal Circuit prior to State Street].").

[7] One commentator notes that both Japan and the Republic of Korea explicitly define an "invention" as the application of a law of nature, and argues that the United States should follow a similar approach to patentability. See Andrew A. Schwartz, The Patent Office Meets the Poison Pill: Why Legal Methods Cannot be Patented, 20 Harv. J. Law & Tech. 333, 357 (2007).

Heritage Dictionary of the English Language 1777 (4th ed. 2000) ("Technology" is the "application of science, especially to industrial or commercial objectives."); see also Sfekas, supra at 214-15 ("The [Supreme] Court's holdings in Benson and Diehr are really stating a requirement that inventions must be technological."); Schwartz, supra at 357 (The "clear and consistent body of Supreme Court case law establishes that the term 'invention' encompasses anything made by man that utilizes or harnesses one or more 'laws of nature' for human benefit."). As the Supreme Court has made clear, "the act of invention ... consists neither in finding out the laws of nature, nor in fruitful research as to the operation of natural laws, but in discovering how those laws may be utilized or applied for some beneficial purpose, by a process, a device or a machine." United States v. Dubilier Condenser Corp., 289 U.S. 178, 188, 53 S.Ct. 554, 77 L.Ed. 1114 (1933).

Methods of doing business do not apply "the law of nature to a new and useful end." Because the innovative aspect of such methods is an entrepreneurial rather than a technological one, they should be deemed ineligible for patent protection. See, e.g., John R. Thomas, The Patenting of the Liberal Professions, 40 B.C. L.Rev. 1139 (1999) (arguing that affording patentability to business methods opens the door to obtaining patent protection for all aspects of human thought and behavior, and that patents should remain grounded in science and technology) (hereinafter "Thomas (1999)"). "[T]he primary purpose of our patent laws is not the creation of private fortunes for the owners of patents but is 'to promote the progress of science and useful arts.'" Motion Picture Patents Co. v. Universal Film Mfg. Co., 243 U.S. 502, 511, 37 S.Ct. 416, 61 L.Ed. 871 (1917).

Although business method patents may do much to enrich their owners, they do little to promote scientific research and technological innovation.

IV.

State Street has launched a legal tsunami, inundating the patent office with applications seeking protection for common business practices.[8] Applications for Class 705 (business method) patents increased from fewer than 1,000 applications in 1997 to more than 11,000 applications in 2007. See United States Patent and Trademark Office, Class 705 Application Filings and Patents Issued Data, available at http://www.uspto.gov/web/menu/pbmethod/applicationfiling.htm (information available as of Jan. 2008); see Douglas L. Price, Assessing the Patentability of Financial Services and Products, 3 J. High Tech. L. 141, 153 (2004) ("The State Street case has opened the floodgates on business method patents.").

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[8] Congress has acted to ameliorate some of the negative effects of granting patents on methods of doing business. It passed the American Inventors Protection Act (commonly referred to as the First Inventor Defense Act) which provides an affirmative defense against a business method patent infringement action if the defendant "acting in good faith, actually reduced the subject matter to practice at least 1 year before the effective filing date of such patent, and commercially used the subject matter before the effective filing date of such patent." See35 U.S.C. § 273. Even where a defendant may qualify for this defense, however, he "still must engage in expensive litigation where [he] bears the burden of affirmatively raising and proving the defense." See Nicholas A. Smith, Business Method Patents and Their Limits: Justifications, History, and the Emergence of A Claim Construction Jurisprudence, 9 Mich. Telecomm. & Tech. L.Rev. 171, 199 (2002).

Patents granted in the wake of *State Street* have ranged from the somewhat ridiculous to the truly absurd. *See*, *e.g.*, U.S. Patent No. 5,851,117 (method of training janitors to dust and vacuum using video displays); U.S. Patent No. 5,862,223 (method for selling expert advice); U.S. Patent No. 6,014,643 (method for trading securities); U.S. Patent No. 6,119,099 (method of enticing customers to order additional food at a fast food restaurant); U.S. Patent No. 6,329,919 (system for toilet reservations); U.S. Patent No. 7,255,277 (method of using color-coded bracelets to designate dating status in order to limit "the embarrassment of rejection"). There has even been a patent issued on a method for obtaining a patent. *See* U.S. Patent No. 6,049,811. Not surprisingly, *State Street* and its progeny have generated a thundering chorus of criticism. *See* Leo J. Raskind, *The State Street Bank Decision: The Bad Business of Unlimited Patent Protection for Methods of Doing Business*, 10 Fordham Intell. Prop. Media & Ent. L.J. 61, 61 (1999) ("The Federal Circuit's recent endorsement of patent protection for methods of doing business marks so sweeping a departure from precedent as to invite a search for its justification."); Pollack, *supra* at 119-20 (arguing that *State Street* was based upon a misinterpretation of both the legislative history and the language of section 101 and that "business method patents are problematical both socially and constitutionally"); Price, *supra* at 155 ("The fall out from *State Street* has created a gold-rush mentality toward patents and litigation in which companies .... gobble up patents on anything and everything.... It is a mad rush to get as many dumb patents as possible."(citations and internal quotation marks omitted)); Thomas (1999), *supra* at 1160 ("After *State Street*, it is hardly an exaggeration to say that if you can name it, you can claim it."); Sfekas, supra at 226 ("[T]he U.S. courts have set too broad a standard for patenting business methods.... These business method patents tend to be of lower quality and are unnecessary to achieve the goal of encouraging innovation in business."); William Krause, Sweeping the E-Commerce Patent Minefield: The Need for a Workable Business Method Exception, 24 Seattle U.L.Rev. 79, 101 (2000) (State Street "opened up a world of unlimited possession to anyone quick enough to take a business method and put it to use via computer software before anyone else."); Moy, supra at 1051 ("To call [the situation following State Street] distressing is an understatement. The consensus ... appears to be that patents should not be issuing for new business methods.").

There are a host of difficulties associated with allowing patents to issue on methods of conducting business. Not only do such patents tend to impede rather than promote innovation, they are frequently of poor quality. Most fundamentally, they raise significant First Amendment concerns by imposing broad restrictions on speech and the free flow of ideas.

A.

"[T]he underlying policy of the patent system [is] that 'the things which are worth to the public the embarrassment of an exclusive patent,'... must outweigh the restrictive effect of the limited patent monopoly." Graham, 383 U.S. at 10-11, 86 S.Ct. 684 (quoting letter from Thomas Jefferson to Isaac McPherson (Aug. 1813)). Thus, Congress may not expand the scope of "the patent monopoly without regard to the ... advancement or social benefit gained thereby." Id. at 6, 86 S.Ct. 684.

Patents should be granted to those inventions "which would not be disclosed or devised but for the inducement of a patent." *Id.* at 11, 86 S.Ct. 684. Methods of doing business have existed since the earliest days of the Patent Act and have flourished even in the absence of patent protection. *See* Brian P. Biddinger, *Limiting the Business Method Patent: A Comparison and Proposed Alignment of European, Japanese and United States Patent Law*, 69 Fordham L.Rev. 2523, 2544-50 (2001). Commentators have argued that "the broad grant of patent protection for methods of doing business is something of a square peg in a sinkhole of uncertain dimensions" since "[n]owhere in the substantial literature on innovation is there a statement that the United States economy suffers from a lack of innovation in methods of doing business." Raskind, *supra* at 92-93. Instead, "the long history of U.S. business is one of innovation, emulation, and innovation again. It also is a history of remarkable creativity and success, all without business method patents until the past few years." Smith, *supra* at 178; *see also* Sfekas, *supra* at 213 ("While innovation in business methods is a good thing, it is likely that there would be the same level of innovation even without patents on [such methods].").

Business innovations, by their very nature, provide a competitive advantage and thus generate their own incentives. *See* Xiang, *supra* at 813 ("A business entity improves the way it does business in order to be more effective and efficient, to stay ahead of [the] competition, and to make more profit."). The rapid "growth of fast food restaurants, self-service gasoline stations, quick oil change facilities ... automatic teller devices ... and alternatives for long-distance telephone services" casts real doubt about the need for the additional incentive of patent protection in the commercial realm. Raskind, supra at 93.

Although patents are not a prerequisite to business innovation, they are of undeniable importance in promoting technological advances. For example, the pharmaceutical industry relies on patent protection in order to recoup the large sums it invests to develop life-saving and life-enhancing drugs:

> [T]he "fully loaded" cost of developing a single new pharmaceutical molecule, taking it though laboratory and clinical trials, and securing FDA approval for its marketing is today about $800 million (including the cost of project failures). Furthermore, fewer than one in five drug candidates that make it out of the laboratory survive this tortuous process and reach the marketplace in the form of FDA-approved pharmaceuticals.... Only patent protection can make the innovator's substantial investment in development and clinical testing economically rational.

Jay Dratler, Jr., Alice in Wonderland Meets the U.S. Patent System, 38 Akron L.Rev. 299, 313-14 (2005) (footnotes omitted).

Business method patents, unlike those granted for pharmaceuticals and other products, offer rewards that are grossly disproportionate to the costs of innovation. In contrast to technological endeavors, business innovations frequently involve little or no investment in research and development. Bilski, for example, likely spent only nominal sums to develop his hedging method. The reward he could reap if his application were allowed-exclusive rights over methods of managing risks in a wide array of commodity transactions-vastly exceeds any costs he might have incurred in devising his "invention."

B.

"[S]ometimes too much patent protection can impede rather than 'promote the Progress of Science and useful Arts,' the constitutional objective of patent and copyright protection." Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc., 548 U.S. 124, 126, 126 S.Ct. 2921, 165 L.Ed.2d 399 (2006) (Breyer, J., joined by Stevens and Souter, JJ., dissenting from dismissal of writ of certiorari) (emphasis in original). This is particularly true in the context of patents on methods of conducting business. Instead of providing incentives to competitors to develop improved business techniques, business method patents remove building blocks of commercial innovation from the public domain. Dreyfuss, supra at 275-77. Because they restrict competitors from using and improving upon patented business methods, such patents stifle innovation. When "we grant rights to exclude unnecessarily, we ... limit competition with no quid pro quo. Retarding competition retards further development." Pollack, supra at 76. "Think how the airline industry might now be structured if the first company to offer frequent flyer miles had enjoyed the sole right to award them or how differently mergers and acquisitions would be financed ... if the use of junk bonds had been protected by a patent." Dreyfuss, supra at 264. By affording patent protection to business practices, "the government distorts the operation of the free market system and reduces the gains from the operation of the market." Sfekas, supra at 214.

It is often consumers who suffer when business methods are patented. See Raskind, supra at 82. Patented products are more expensive because licensing fees are often passed on to consumers. See Lois Matelan, The Continuing Controversy Over Business Method Patents, 18 Fordham Intell. Prop. Med. & Ent. L.J. 189, 201 (2007). Further, as a general matter, "quantity and quality [of patented products] are less than they would be in a competitive market." Dreyfuss, supra at 275.

Patenting business methods makes American companies less competitive in the global marketplace. American companies can now obtain exclusionary rights on methods of conducting business, but their counterparts in Europe and Japan generally cannot. See Biddinger, supra at 2546-47. Producing products in the United States becomes more expensive because American companies, unlike their overseas counterparts, must incur licensing fees in order to use patented business methods:

> [O]nce a United States patent application for a new method of doing business becomes publicly available, companies in Europe and Japan may begin using the method outside the United States, while American companies in competition with the patentee would be unable to use the method in the United States without incurring licensing fees. The result is that companies outside of the United States receive the benefit of the novel method without incurring either the research and development costs of the inventor, or the licensing fees of the patentee's American competitors.

Id. at 2545-46.

C.

Another significant problem that plagues business method patents is that they tend to be of poor overall quality. See eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388, 397, 126 S.Ct. 1837, 164 L.Ed.2d 641 (2006) (Kennedy, J., joined by Stevens, Souter, and Breyer, JJ., concurring) (noting the "potential vagueness and suspect validity" of some of "the burgeoning number of patents over business methods"). Commentators have lamented "the frequency with which the Patent Office issues patents on shockingly mundane business inventions." Dreyfuss, supra at 268; see also Pollack, supra at 106 ("[M]any of the recently-issued business method patents are facially (even farcically) obvious to persons outside the USPTO."). One reason for the poor quality of business method patents is the lack of readily accessible prior art references. Because business methods were not patentable prior to State Street, "there is very little patent-related prior art readily at hand to the examiner corps." Dreyfuss, supra at 269.

Furthermore, information about methods of conducting business, unlike information about technological endeavors, is often not documented or published in scholarly journals. See Russell A. Korn, Is Legislation the Answer? An Analysis of the Proposed Legislation for Business Method Patents, 29 Fla. St. U.L.Rev. 1367, 1372-73 (2002). The fact that examiners lack the resources to weed out undeserving applications "has led to the improper approval of a large number of patents, leaving private parties to clean up the mess through litigation." Krause, supra at 97.

Allowing patents to issue on business methods shifts critical resources away from promoting and protecting truly useful technological advances. As discussed previously, the patent office has been deluged with business method applications in recent years. Time spent on such applications is time not spent on applications which claim true innovations. When already overburdened examiners are forced to devote significant time to reviewing large numbers of business method applications, the public's access to new and beneficial technologies is unjustifiably delayed.

D.

Patenting business methods allows private parties to claim exclusive ownership of ideas and practices which rightfully belong in the public domain. "It is a matter of public interest that [economic] decisions, in the aggregate, be intelligent and well informed. To this end, the free flow of commercial information is indispensable." Virginia State Bd. of Pharmacy v. Virginia Citizens Consumer Council, Inc., 425 U.S. 748, 765, 96 S.Ct. 1817, 48 L.Ed.2d 346 (1976). Thus, "the stringent requirements for patent protection seek to assure that ideas in the public domain remain there for the free use of the public." Aronson v. Quick Point Pencil Co., 440 U.S. 257, 262, 99 S.Ct. 1096, 59 L.Ed.2d 296 (1979).

Bilski's claimed method consists essentially of two conversations. The first conversation is between a commodity provider and a commodity consumer, while the second conversation is between the provider and "market participants" who have "a counter-risk position to ... consumers." His claims provide almost no details as to the contents of these conversations.

Like many business method applications, Bilski's application is very broadly drafted. It covers a wide range of means for "hedging" in commodity transactions. If his application were allowed, anyone who discussed ways to balance market risks in any sort of commodity could face potential infringement liability. By adopting overly expansive standards for patentability, the government enables private parties to impose broad and unwarranted burdens on speech and the free flow of ideas. See Thomas F. Cotter, A Burkean Perspective on Patent Eligibility, 22 Berkeley Tech. L.J. 855, 880-82 (2007) (arguing that overly expansive patent eligibility standards can result in the granting of patents that threaten free speech, privacy and other constitutionally-protected rights); John R. Thomas, The Future of Patent Law: Liberty and Property in the Patent Law, 39 Hous. L.Rev. 569, 589 (2002) (arguing that "the patent law allows private actors to impose more significant restraints on speech than has ever been possible through copyright"); see also Cent. Hudson Gas & Elec. Corp. v. Pub. Serv. Comm'n of New York, 447 U.S. 557, 569-70, 100 S.Ct. 2343, 65 L.Ed.2d 341 (1980) (The First Amendment mandates that restrictions on free speech in commercial transactions be "no more extensive than necessary.").

To the extent that business methods are deemed patentable, individuals can face unexpected potential infringement liability for everyday conversations and commercial interactions. "[I]mplicit in the Patent Clause itself [is the understanding] that free exploitation of ideas will be the rule, to which the pro-tection of a federal patent is the exception." Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 151, 109 S.Ct. 971, 103 L.Ed.2d 118 (1989). In the wake of State Street, too many patent holders have been allowed to claim exclusive ownership of subject matter that rightfully belongs in the public domain.

V.

The majority's proposed "machine-or-transformation test" for patentability will do little to stem the growth of patents on non-technological methods and ideas. Quite simply, in the context of business method patent applications, the majority's proposed standard can be too easily circumvented. See Cotter, supra at 875 (noting that the physical transformation test for patentability can be problematic because "[i]n a material universe, every process will cause some sort of physical transformation, if only at the microscopic level or within the human body, including the brain"). Through clever draftsmanship, nearly every process claim can be rewritten to include a physical transformation. Bilski, for example, could simply add a requirement that a commodity consumer install a meter to record commodity consumption. He could then argue that installation of this meter was a "physical transformation," sufficient to satisfy the majority's proposed patentability test.

Even as written, Bilski's claim arguably involves a physical transformation. Prior to utilizing Bilski's method, commodity providers and commodity consumers are not involved in transactions to buy and sell a commodity at a fixed rate. By using Bilski's claimed method, however, providers and consumers enter into a series of transactions allowing them to buy and sell a particular commodity at a particular price. Entering into a transaction is a physical process: telephone calls are made, meetings are held, and market participants must physically execute contracts. Market participants go from a state of not being in a commodity transaction to a state of being in such a transaction. The majority, however, fails to explain how this sort of physical transformation is insufficient to satisfy its proposed patent eligibility standard.

The majority suggests that a technological arts test is nothing more that a "shortcut" for its machine-or-transformation test. Ante at 964. To the contrary, however, the two tests are fundamentally different. Consider U.S. Patent No. 7,261,652, which is directed to a method of putting a golf ball, U.S. Patent No. 6,368,227, which is directed to a method of swinging on a swing suspended on a tree branch, and U.S. Patent No. 5,443,036, which is directed to a method of "inducing cats to exercise." Each of these "inventions" involves a physical transformation that is central to the claimed method: the golfer's stroke is changed, a person on a swing starts swinging, and the sedentary cat becomes a fit feline. Thus, under the majority's approach, each of these inventions is patent eligible. Under a technological arts test, however, none of these inventions is eligible for patent protection because none involves any advance in science or technology.[9]

Regardless of whether a claimed process involves a "physical transformation," it should not be patent eligible unless it is directed to an advance in science or technology. See Benson, 409 U.S. at 64-71, 93 S.Ct. 253 (finding a process unpatentable even though it "transformed" binary-coded decimals into pure binary numbers using a general purpose computer). Although the Supreme Court has stated that a patentable process will usually involve a transformation of physical matter, see id. at 70, 93 S.Ct. 253, it has never found a process patent eligible which did not involve a scientific or technological innovation. See Diehr, 450 U.S. at 192-93, 101 S.Ct. 1048 (finding a process patentable where it involved new technology for curing rubber).

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[9] The majority's approach will encourage rent-seeking on a broad range of human thought and behavior. For example, because organizing a country into a democratic or socialist regime clearly involves a physical transformation, what is to prevent patents from issuing on forms of government?

The majority refuses to inject a technology requirement into the section 101 analysis because it believes that the terms "technological arts" and "technology" are "ambiguous." See ante at 960. To the contrary, however, the meaning of these terms is not particularly difficult to grasp. "The need to apply some sort of 'technological arts' criterion has hardly led other countries' and regions' patent systems to grind to a halt; it is hard to see why it should be an insurmountable obstacle for ours." Cotter, supra at 885. As discussed more fully in section III, a claimed process is technological to the extent it applies laws of nature to new ends. See Benson, 409 U.S. at 67, 93 S.Ct. 253 ("'If there is to be invention from ... a discovery, it must come from the application of the law of nature to a new and useful end.'" (quoting Funk Bros., 333 U.S. at 130, 68 S.Ct. 440)). By contrast, a process is non-technological where its inventive concept is the application of principles drawn not from the natural sciences but from disciplines such as business, law, sociology, or psychology. See Thomas (1999), supra at 1168 ("[F]ew of us would suppose that inventions within the domain of business, law or fine arts constitute technology, much less patentable technology."). The inventive aspect of Bilski's claimed process is the application of business principles, not laws of nature; it is therefore non-technological and ineligible for patent protection.

Unlike a technological standard for patentability, the majority's proposed test will be exceedingly difficult to apply. The standard that the majority proposes for inclusion in the patentability lexicon-"transformation of any physical object or substance, or an electronic signal representative of any physical object or substance," ante at 964—is unnecessarily complex and will only lead to further uncertainty regarding the scope of patentable subject matter. As noted in In re Nuijten, 500 F.3d 1346, 1353 (Fed.Cir.2007), defining the term "physical" can be an "esoteric and metaphysical" inquiry. Indeed, although this court has struggled for years to set out what constitutes sufficient physical transformation to render a process patentable, we have yet to provide a consistent or satisfactory resolution of this issue.

We took this case en banc in a long-overdue effort to resolve primal questions on the metes and bounds of statutory subject matter. The patent system has run amok, and the USPTO, as well as the larger patent community, has actively sought guidance from this court in making sense of our section 101 jurisprudence. See Supplemental Br. of Appellee at 3 ("[The Federal Circuit] should clarify the meaning of State Street and AT & T, as they have been too often misunderstood."); Br. of Fin. Serv. Indus. at 1 ("The rise of [business method patents] in recent years has ... led to uncertainty over the scope of the patents granted and, more fundamentally, the definition of patentable subject matter itself. [We] seek a workable standard defining the scope of patentable subject matter, one that ... provides clear guidance to the Patent and Trademark Office ... and the public."); Br. of Samuelson Law, Tech. and Public Policy Clinic at 1 ("Ever since State Street, the [USPTO] has been flooded with applications for a wide variety of non-technological 'inventions' such as arbitration methods, dating methods, tax-planning methods, legal methods, and novel-writing methods. These applications have eroded public confidence in the patent system and driven up the cost and decreased the return for applicants seeking legitimate technological patents."(footnote omitted)); Br. of Assoc. of Am. Medical Colleges at 29 (arguing that "broad swaths of the public and certain industry sectors" have lost respect for the patent system and that "[the Federal Circuit] should act, even if its actions mean unsettling the settled expectations of some"). The majority, however, fails to enlighten three of the thorniest issues in the patentability thicket: (1) the continued viability of business method patents, (2) what constitutes sufficient physical transformation or machine-implementation to render a process patentable, and (3) the extent to which computer software and computer-implemented processes constitute statutory subject matter. The majority's "measured approach" to the section 101 analysis, see ante at 962, will do little to restore public confidence in the patent system or stem the growth of patents on business methods and other non-technological ideas.

VI.

Where the advance over the prior art on which the applicant relies to make his invention patentable is an advance in a field of endeavor such as law (like the arbitration method in Comiskey), business (like the method claimed by Bilski) or other liberal—as opposed to technological-arts, the application falls outside the ambit of patentable subject matter. The time is ripe to repudiate State Street and to recalibrate the standards for patent eligibility, thereby ensuring that the patent system can fulfill its constitutional mandate to protect and promote truly useful innovations in science and technology. I dissent from the majority's failure to do so.

RADER, Circuit Judge, dissenting.

This court labors for page after page, paragraph after paragraph, explanation after explanation to say what could have been said in a single sentence: "Because Bilski claims merely an abstract idea, this court affirms the Board's rejection." If the only problem of this vast judicial tome were its circuitous path, I would not dissent, but this venture also disrupts settled and wise principles of law.

Much of the court's difficulty lies in its reliance on dicta taken out of context from numerous Supreme Court opinions dealing with the technology of the past. In other words, as innovators seek the path to the next tech no-revolution, this court ties our patent system to dicta from an industrial age decades removed from the bleeding edge. A direct reading of the Supreme Court's principles and cases on patent eligibility would yield the one-sentence resolution suggested above. Because this court, however, links patent eligibility to the age of iron and steel at a time of subatomic particles and terabytes, I must respectfully dissent.

I

The Patent Law of the United States has always embodied the philosophy that "ingenuity should receive a liberal encouragement." Writings of Thomas Jefferson 75-76 (Washington ed. 1871); see also Diamond v. Chakrabarty, 447 U.S. 303, 308-09, 100 S.Ct. 2204, 65 L.Ed.2d 144 (1980). True to this principle, the original Act made "any new and useful art, machine, manufacture or composition of matter" patent eligible. Act of Feb. 21, 1793, ch. 11, § 1, 1 Stat. 318 (emphasis supplied). Even as the laws have evolved, that bedrock principle remains at their foundation. Thus, the Patent Act from its inception focused patentability on the specific characteristics of the claimed invention-its novelty and utility-not on its particular subject matter category.

The modern incarnation of section 101 holds fast to that principle, setting forth the broad categories of patent eligible subject matter, and conditioning patentability on the characteristics, not the category, of the claimed invention:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. § 101 (2006) (emphases supplied). As I have suggested, the Supreme Court requires this court to rely on the "ordinary, contemporary, common meaning" of these words. Diamond v. Diehr, 450 U.S. 175, 182, 101 S.Ct. 1048, 67 L.Ed.2d 155 (1981). If this court would follow that Supreme Court rule, it would afford broad patent protection to new and useful inventions that fall within the enumerated categories and satisfy the other conditions of patentability. That is, after all, precisely what the statute says.

In Diehr, the Supreme Court adopted a very useful algorithm for determining patentable subject matter, namely, follow the Patent Act itself. After setting forth the procedural history of that case, the Supreme Court stated: "In cases of statutory construction, we begin with the language of the statute." Diehr, 450 U.S. at 182, 101 S.Ct. 1048.With an eye to the Benson language (so central to this court's reasoning) that "[t]ransformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines," Gottschalk v. Benson, 409 U.S. 63, 72, 93 S.Ct. 253, 34 L.Ed.2d 273 (1972), the Court then noted:

> [I]n dealing with the patent laws, we have more than once cautioned that "courts 'should not read into the patent laws limitations and conditions which the legislature has not expressed.'"

Diehr, 450 U.S. at 182, 101 S.Ct. 1048 (citations omitted). Indeed section 101's term "process" contains no hint of an exclusion for certain types of methods. This court today nonetheless holds that a process is eligible only if it falls within certain subsets of "process." Ironically the Patent Act itself specifically defines "process" without any of these judicial innovations. 35 U.S.C. § 100(b). Therefore, as Diehr commands, this court should refrain from creating new circuitous judge-made tests.

Read in context, section 101 gives further reasons for interpretation without innovation. Specifically, section 101 itself distinguishes patent eligibility from the conditions of patentability-providing generously for patent eligibility, but noting that patentability requires substantially more. The language sweeps in "any new and useful process ... [and] any improvement." 35 U.S.C. § 101 (emphasis supplied). As an expansive modifier, "any" embraces the broad and ordinary meanings of the term "process," for instance. The language of section 101 conveys no implication that the Act extends patent protection to some subcategories of processes but not others. It does not mean "some" or even "most," but all.

Unlike the laws of other nations that include broad exclusions to eligible subject matter, such as European restrictions on software and other method patents, see European Patent Convention of 1973, Art. 52(2)(c) and (3), and prohibitions against patents deemed contrary to the public morality, see id. at Art. 53(a), U.S. law and policy have embraced advances without regard to their subject matter. That promise of protection, in turn, fuels the research that, at least for now, makes this nation the world's innovation leader.

II

With all of its legal sophistry, the court's new test for eligibility today does not answer the most fundamental question of all: why would the expansive language of section 101 preclude protection of innovation simply because it is not transformational or properly linked to a machine (whatever that means)? Stated even more simply, why should some categories of invention deserve no protection?

This court, which reads the fine print of Supreme Court decisions from the Industrial Age with admirable precision, misses the real import of those decisions. The Supreme Court has answered the fundamental question above many times. The Supreme Court has counseled that the only limits on eligibility are inventions that embrace natural laws, natural phenomena, and abstract ideas. See, e.g., Diehr, 450 U.S. at 185, 101 S.Ct. 1048 ("This Court has undoubtedly recognized limits to § 101 and every discovery is not embraced within the statutory terms. Excluded from such patent protection are laws of nature, natural phenomena, and abstract ideas."). In Diehr, the Supreme Court's last pronouncement on eligibility for "processes," the Court said directly that its only exclusions from the statutory language are these three common law exclusions: "Our recent holdings ... stand for no more than these long-established principles." Id. at 185, 101 S.Ct. 1048.

This point deserves repetition. The Supreme Court stated that all of the transformation and machine linkage explanations simply restated the abstractness rule. In reading Diehr to suggest a non-statutory transformation or preemption test, this court ignores the Court's admonition that all of its recent holdings do no more than restate the natural laws and abstractness exclusions. Id.; see also Chakrabarty, 447 U.S. at 310, 100 S.Ct. 2204 ("Here, by contrast, the patentee has produced a new bacterium with markedly different characteristics from any found in nature and one having the potential for significant utility. His discovery is not nature's handiwork, but his own; accordingly it is patentable subject matter under § 101."); Parker v. Flook, 437 U.S. 584, 591-594, 98 S.Ct. 2522, 57 L.Ed.2d 451 (1978) ("Even though a phenomenon of nature or mathematical formula may be well known, an inventive application of the principle may be patented. Conversely, the discovery of such a phenomenon cannot support a patent unless there is some other inventive concept in its application."); In re Taner, 681 F.2d 787, 791 (C.C.P.A 1982) ("In Diehr, the Supreme Court made clear that Benson stands for no more than the long-established principle that laws of nature, natural phenomena, and abstract ideas are excluded from patent protection.").

The abstractness and natural law preclusions not only make sense, they explain the purpose of the expansive language of section 101. Natural laws and phenomena can never qualify for patent protection because they cannot be invented at all. After all, God or Allah or Jahveh or Vishnu or the Great Spirit provided these laws and phenomena as humanity's common heritage. Furthermore, abstract ideas can never qualify for patent protection because the Act intends, as section 101 explains, to provide "useful" technology. An abstract idea must be applied to (transformed into) a practical use before it qualifies for protection. The fine print of Supreme Court opinions conveys nothing more than these basic principles. Yet this court expands (transforms?) some Supreme Court language into rules that defy the Supreme Court's own rule.

When considering the eligibility of "processes," this court should focus on the potential for an abstract claim. Such an abstract claim would appear in a form that is not even susceptible to examination against prior art under the traditional tests for patentability. Thus this court would wish to ensure that the claim supplied some concrete, tangible technology for examination. Indeed the hedging claim at stake in this appeal is a classic example of abstractness. Bilski's method for hedging risk in commodities trading is either a vague economic concept or obvious on its face. Hedging is a fundamental economic practice long prevalent in our system of commerce and taught in any introductory finance class. In any event, this facially abstract claim does not warrant the creation of new eligibility exclusions.

III

This court's willingness to venture away from the statute follows on the heels of an oft-discussed dissent from the Supreme Court's dismissal of its grant of certiorari in Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc., 548 U.S. 124, 126 S.Ct. 2921, 165 L.Ed.2d 399 (2006). That dissent is premised on a fundamental misapprehension of the distinction between a natural phenomenon and a patentable process.

The distinction between "phenomena of nature," "mental processes," and "abstract intellectual concepts" is not difficult to draw. The fundamental error in that Lab. Corp. dissent is its failure to recognize the difference between a patent ineligible relationship—i.e., that between high homocysteine levels and folate and cobalamin deficiencies—and a patent eligible process for applying that relationship to achieve a useful, tangible, and concrete result—i.e., diagnosis of potentially fatal conditions in patients. Nothing abstract here. Moreover, testing blood for a dangerous condition is not a natural phenomenon, but a human invention.

The distinction is simple but critical: A patient may suffer from the unpatentable phenomenon of nature, namely high homocysteine levels and low folate. But the invention does not attempt to claim that natural phenomenon. Instead the patent claims a process for assaying a patient's blood and then analyzing the results with a new process that detects the life-threatening condition. Moreover, the sick patient does not practice the patented invention. Instead the patent covers a process for testing blood that produces a useful, concrete, and tangible result: incontrovertible diagnostic evidence to save lives. The patent does not claim the patent ineligible relationship between folate and homocysteine, nor does it foreclose future inventors from using that relationship to devise better or different processes. Contrary to the language of the dissent, it is the sick patient who "embod[ies] only the correlation between homocysteine and vitamin deficiency," Lab. Corp., 548 U.S. at 137, 126 S.Ct. 2921, not the claimed process.

From the standpoint of policy, the Lab. Corp. dissent avoids the same fundamental question that the Federal Circuit does not ask or answer today: Is this entire field of subject matter undeserving of incentives for invention? If so, why? In the context of Lab. Corp. that question is very telling: the natural condition diagnosed by the invention is debilitating and even deadly. See U.S. Patent No. 4,940,658, col. 1, ll. 32-40 ("Accurate and early diagnosis of cobalamin and folate deficiencies... is important because these deficiencies can lead to life-threatening hematologic abnormalities.... Accurate and early diagnosis of cobalamin deficiency is especially important because it can also lead to incapacitating and life-threatening neuropsychiatric abnormalities."). Before the invention featured in Lab. Corp., medical science lacked an affordable, reliable, and fast means to detect this debilitating condition. Denial of patent protection for this innovation-precisely because of its elegance and simplicity (the chief aims of all good science)—would undermine and discourage future research for diagnostic tools. Put another way, does not Patent Law wish to encourage researchers to find simple blood tests or urine tests that predict and diagnose breast cancers or immunodeficiency diseases? In that context, this court might profitably ask whether its decisions incentivize research for cures and other important technical advances. Without such attention, this court inadvertently advises investors that they should divert their unprotectable investments away from discovery of "scientific relationships" within the body that diagnose breast cancer or Lou Gehrig's disease or Parkinson's or whatever.

IV

In sum, this court today invents several circuitous and unnecessary tests. It should have merely noted that Bilski attempts to patent an abstract idea. Nothing more was needed. Instead this opinion propagates unanswerable questions: What form or amount of "transformation" suffices? When is a "representative" of a physical object sufficiently linked to that object to satisfy the transformation test? (e.g., Does only vital sign data taken directly from a patient qualify, or can population data derived in part from statistics and extrapolation be used?) What link to a machine is sufficient to invoke the "or machine" prong? Are the "specific" machines of Benson required, or can a general purpose computer qualify? What constitutes "extra-solution activity?" If a process may meet eligibility muster as a "machine," why does the Act "require" a machine link for a "process" to show eligibility? Does the rule against redundancy itself suggest an inadequacy in this complex spider web of tests supposedly "required" by the language of section 101?

One final point, reading section 101 as it is written will not permit a flurry of frivolous and useless inventions. Even beyond the exclusion for abstractness, the final clause of section 101—"subject to the conditions and requirements of this title"—ensures that a claimed invention must still satisfy the "conditions and requirements" set forth in the remainder title 35. Id. These statutory conditions and requirements better serve the function of screening out unpatentable inventions than some vague "transformation" or "proper machine link" test.

In simple terms, the statute does not mention "transformations" or any of the other Industrial Age descriptions of subject matter categories that this court endows with inordinate importance today. The Act has not empowered the courts to impose limitations on patent eligible subject matter beyond the broad and ordinary meaning of the terms process, machine, manufacture, and composition of matter. It has instead preserved the promise of patent protection for still unknown fields of invention.

Innovation has moved beyond the brick and mortar world. Even this court's test, with its caveats and winding explanations seems to recognize this. Today's software transforms our lives without physical anchors. This court's test not only risks hobbling these advances, but precluding patent protection for tomorrow's technologies. "We still do not know one thousandth of one percent of what nature has revealed to us." Attributed to Albert Einstein. If this court has its way, the Patent Act may not incentivize, but complicate, our search for the vast secrets of nature. When all else fails, consult the statute.

APPENDIX B

UNITED STATES COURT OF APPEALS, FEDERAL CIRCUIT.

No. 2007-1130.

IN RE: BERNARD L. BILSKI AND RAND A. WARSAW.

Feb. 15, 2008.

ORDER

Before MICHEL, *Chief Judge*, NEWMAN, MAYER, LOURIE, RADER, SCHALL, BRYSON, GAJARSA, LINN, DYK, PROST, and MOORE, *Circuit Judges*.

PER CURIAM.

This case was argued before a panel of this court on October 1, 2007. Thereafter, a poll of the judges in regular active service was conducted to determine whether the appeal should be heard en banc.

Upon consideration thereof, IT IS ORDERED THAT:

> The court by its own action grants a hearing en banc. The parties are requested to file supplemental briefs that should address the following questions:
>
> (1) Whether claim 1 of the 08/833,892 patent application claims patent-eligible subject matter under 35 U.S.C. § 101?
>
> (2) What standard should govern in determining whether a process is patent-eligible subject matter under section 101?

(3) Whether the claimed subject matter is not patent-eligible because it constitutes an abstract idea or mental process; when does a claim that contains both mental and physical steps create patent-eligible subject matter?

(4) Whether a method or process must result in a physical transformation of an article or be tied to a machine to be patent-eligible subject matter under section 101?

(5) Whether it is appropriate to reconsider *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed.Cir. 1998), and *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed.Cir.1999), in this case and, if so, whether those cases should be overruled in any respect?

This appeal will be heard en banc on the basis of the original briefs and supplemental briefs addressing, inter alia, the issues set forth above. An original and thirty copies of all briefs shall be filed, and two copies served on opposing counsel. The parties shall file simultaneous supplemental briefs which are due in the court within 20 days from the date of filing of this order, *i.e.*, on March 6, 2008. No further briefing will be entertained. Supplemental briefs shall adhere to the type-volume limitations for principal briefs set forth in Federal Rule of Appellate Procedure 32 and Federal Circuit Rule 32.

Any amicus briefs will be due 30 days thereafter. Any such briefs may be filed without leave of court but otherwise must comply with Federal Rule of Appellate Procedure 29 and Federal Circuit Rule 29. Oral argument will be held on Thursday, May 8 at 2:00 p.m. in Courtroom 201.

APPENDIX C

The opinion in support of the decision being entered
today was not written for publication and is
not binding precedent of the Board.

BOARD OF PATENT APPEALS AND
INTERFERENCES INFORMATIVE OPINION

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex Parte BERNARD L. BILSKI AND RAND A. WARSAW

Appeal No. 2002-2257
Application 08/833,892[1]

HEARD: MARCH 8, 2006[2]
MAILED: SEPTEMBER 26, 2006

Before FRANKFORT, McQUADE, BARRETT, BAHR, and NAGUMO, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) from the final rejection of claims 1-11.

We affirm.

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[1] Application for patent filed April 10, 1997, entitled "Energy Risk Management Method," which claims the priority benefit under 35 U.S.C. § 119(e) of Provisional Application 60/015,756, filed April 16, 1996.

[2] The case was previously heard on April 3, 2003, by Administrative Patent Judges Barrett, Fleming, and Nagumo, but no decision was entered.

BACKGROUND

The invention relates to a method practiced by a commodity provider for managing (i.e., hedging) the consumption risks associated with a commodity sold at a fixed price. It is disclosed that energy consumers face two kinds of risk: price risk and consumption risk (specification, p. 1). The proliferation of price risk management tools over the last 5 years before the filing date allows easy management of price risk (specification, p. 2). However, consumption risk (e.g., the need to use more or less energy than planned due to the weather) is said to be not currently managed in energy markets, which is the problem addressed by the invention (specification, p. 2).

Claim 1 is reproduced below.

> 1. A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:
>
> (a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer;
>
> (b) identifying market participants for said commodity having a counter-risk position to said consumers; and
>
> (c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions.

THE REJECTION

No references are applied in the rejection.

Claims 1-11 stand rejected under 35 U.S.C. § 101 as being directed to nonstatutory subject matter.

Pages of the final rejection (Paper No. 15) are referred to as "FR__." Pages of the examiner's answer (Paper No. 18) are referred to as "EA__" Pages of the appeal brief (Paper No. 17) are referred to as "Br__" Pages of the reply brief (Paper No. 19) are referred to as "RBr__"

The examiner's position is summarized in the statement that, "[r]egarding [] claims 1-11, the invention is not implemented on a specific apparatus and merely manipulates [an] abstract idea and solves a purely mathematical problem without any limitation to a practical application, therefore, the invention is not directed to the technological arts" (FR4). That is, the examiner states that the invention is an "abstract idea," and apparently a "mathematical algorithm," and does not fall within the "technological arts" according to In re Musgrave, 431 F.2d 882, 893, 167 USPQ 280, 289-90 (CCPA 1970), where the examiner states (FR4): "The definition of 'technology' is the 'application of science and engineering to the development of machines and procedures in order to enhance or improve human conditions, or at least improve human efficiency in some respect.' (Computer Dictionary 384 (Microsoft Press, 2d ed. 1994))." The examiner finds that no specific apparatus is disclosed to perform the steps, so "claims 1-11 are intended to be directed to the abstract method apart from the apparatus for performing the method" (FR4) and "[t]herefore, the claims are non-statutory, because they are directed solely to an abstract idea and solve[] a purely mathematical problem without practical application in the technological arts" (FR4). Therefore, the final rejection relies on both the "abstract ideal" exclusion and a "technological arts" test for statutory subject matter.

In the examiner's answer, it is stated that "Applicant['s admission] that the steps of the method need not be performed on a computer (Appeal Brief at page 6) coupled with no disclosure of a computer or any other means to carry out the invention, make it clear that the invention is not in the technological arts" (EA4). The examiner states that the disclosure does not describe an implementation in the technological arts. The examiner states that the only way to perform the steps without a computer is by human means, and, therefore, the method is not technological because it does not "improve human efficiency" as required by the definition of "technology" (EA5-6). Thus, the examiner's answer relies primarily on a "technological arts" test.

DISCUSSION

The issue

The issue is whether the subject matter of claims 1-11 is directed to a statutory "process" under 35 U.S.C. § 101. We conclude that it is not.

Equally important is what test(s) should be applied in determining statutory subject matter.

Non-machine-implemented methods

The "useful arts" in the Constitution, are implemented by Congress in the statutory categories of eligible subject matter in 35 U.S.C. § 101: "process, machine, manufacture, or composition of matter, or any new and useful improvements thereof." Machines, manufactures, and man-made compositions of matter represent tangible physical things invented by man and seldom raise a § 101 issue, except for the "special case" of claims to general purpose machines (usually computers) that merely perform abstract ideas (*e.g.*, mathematical algorithms), where the fact that the claim is nominally directed to a "machine" under, § 101 does not preclude it from being held nonstatutory. Machine-implemented methods also seldom have a problem being considered a process under § 101 because a "process" includes a new use for a known machine, § 100 (b), again except for the "special case" of machine-implemented abstract ideas. However, "non-machine-implemented" methods, because of their abstract nature, present § 101 issues.

This appeal involves "non-machine-implemented" method claims, i.e., the claims do not recite how the steps are implemented and are broad enough to read on performing the steps without any machine or apparatus (although performing the steps on a machine would, of course, infringe). The steps of claim 1: do not recite any specific way of implementing the steps; do not expressly or impliedly recite any physical transformation of physical subject matter, tangible or intangible, from one state into another; do not recite any electrical, chemical, or mechanical acts or results; do not directly or indirectly recite transforming data by a mathematical or non-mathematical algorithm; are not required to be performed on a machine, such as a computer, either as claimed or disclosed; could be performed entirely by human beings; and do not involve making or using a machine, manufacture, or composition of matter. We do not believe the outcome in this case is controlled by the Federal Circuit decisions in State St. Bank & Trust Co. v. Signature Fin. Group, Inc., 149 F. 3d 1368, 47

USPQ2d 1596 (Fed. Cir. 1998) and AT&T Corp. v. Excel Communications, Inc., 172 F.3d 1352, 50 USPQ2d 1447 (Fed. Cir. 1999) because we interpret those cases to involve the "special case" of transformation of data by a machine.

The question of whether this type of non-machine-implemented subject matter is patentable is a common and important one to the U.S. Patent and Trademark Office (USPTO), as the bounds of patentable subject matter are increasingly being tested. In recent years, the USPTO has been flooded with claims to "processes," many of which bear scant resemblance to classical processes of manipulating or transforming compositions of matter or forms of energy from one state to another. Many of these applications are referred to as so-called "business methods," but claims to methods of meditation, dating, physical sports moves, etc., are also presented. "Business methods" have long been considered statutory subject matter when performed by a machine. Technology Center 3600, Workgroup 3620, in the USPTO is entirely dedicated to "Electronic Commerce (Business Methods)" in Class 705, "Data Processing: Financial, Business Practice, Management, or Cost/Price Determination"; see http://www.uspto.gov/web/menu/pbmethod. The USPTO no longer rejects claims because the claimed subject matter does "business" instead of something else. See State Street, 149 F.3d at 1377, 47 USPQ2d at 1600 (referring to Examination Guidelines, 61 Fed. Reg. 7478, 7479 (1996)). Nevertheless, many questions remain about statutory subject matter and what the tests are for determining statutory subject matter. State Street and AT&T, often called "revolutionary," involved patented machines or machine-implemented processes that examiners have for sometime regarded as nonexceptional. Perhaps encouraged by certain general language in these cases, however, a wide range of ever more general claims to "processes" come before the Office (although the present case predates both State Street and AT&T). Many, like the claimed process in the present case, are not limited to implementation via any particular technology or machine. Are such "processes" patentable because they are "useful"? Other "process claims" involve what seem to be insubstantial or incidental manipulations of physical subject matter—e.g., the mere recording of a datum: are these patentable processes? Still other process claims involve human physical activity—methods of throwing a ball or causing a fumble. Do these process claims cover patentable subject matter? Must the examiners analyze such claims for compliance with the written description and enablement requirements, and search the prior art for evidence of novelty and nonobviousness?

Given the difficulty for examiners to make § 101 rejections, and the clear disfavor for such rejections in the opinions of our reviewing court, the U.S. Court of Appeals for the Federal Circuit, and in the view of many patent practitioners, it would be much more administratively convenient if the USPTO did not have to examine claims for statutory subject matter under §101. Nevertheless, it is the USPTO's duty to examine claims for compliance with § 101 as well as the other statutory requirements of patentability. See Graham v. John Deere Co., 383 U.S. 1, 18, 148 USPQ 459, 467 (1966) ("[T]he primary responsibility for sifting out unpatentable material lies in the Patent Office. To await litigation is—for all practical purposes—to debilitate the patent system."). The USPTO rejects cases based on its understanding of § 101, not because it may be difficult to find prior art or to examine the claims for novelty and unobviousness. Cf. In re Fisher, 421 F.3d 1365, 1378, 76 USPQ2d 1225, 1235 (Fed. Cir. 2005) ("The concerns of the government and amici [that allowing EST patents would discourage research, delay scientific discovery, and thwart progress in the 'useful Arts'], which may or may not be valid, are not ones that should be considered in deciding whether the application for the claimed ESTs meets the utility requirement of § 101. The same may be said for the resource and managerial problems that the PTO potentially would face if applicants present the PTO with an onslaught of patent applications directed to particular ESTs. Congress did not intend for these practical implications to affect the determination of whether an invention satisfies the requirements set forth in 35 U.S.C. §§ 101, 102, 103, and 112."). In questionable cases, we feel that the public interest is best served by making a rejection. The Federal Circuit cannot address rejections that it does not see. See Enzo Biochem, Inc. v. Gen-Probe Inc., 323 F.3d 956, 972, 63 USPQ2d 1609, 1619 (Fed. Cir. 2002) (Lourie, *J.*, concurring in decision not to hear the case en banc) ("As for the lack of earlier cases on this issue, it regularly happens in adjudication that issues do not arise until counsel raise them, and, when that occurs, courts are then required to decide them.").

Only a very small fraction of the cases examined by the Examining Corps are ever appealed to the Board of Patent Appeals and Interferences (Board), and only a very small fraction of the rejections affirmed by the Board will ever be appealed to the Federal Circuit. The fact that not many § 101 cases get appealed should not be interpreted to mean that these are an insignificant problem to the USPTO and the public. As indicated by Justice Breyer dissenting from the dismissal of certiorari in Laboratory Corp. of America Holdings v. Metabolite Labs., Inc., 126 S. Ct. 2921, 79 USPQ2d 1065 (2006) (Labcorp), there are still unresolved issues under § 101.

Legal analysis of statutory subject matter

Several major analyses of statutory subject matter have been published recently. We review two in detail in the following summary.

Ex parte Lundgren

To avoid repetition, this opinion expressly incorporates by reference the legal analysis of statutory subject matter in the concurring-in-part/dissenting-in-part opinion of Administrative Patent Judge Barrett in Ex parte Lundgren, 76 USPQ2d 1385, 1393-1429 (Bd. Pat. App. & Int. 2005) (precedential). That discussion tries to identify the questions that have not been answered in the analysis of patentable subject matter under § 101 and to identify existing tests for statutory subject matter, rather than create some new test. The USPTO is struggling to identify some way to objectively analyze the statutory subject matter issue instead of just saying "We know it when we see it."

The main points of Lundgren are summarized as follows:[3]

(1) The Constitution authorizes Congress "To promote the Progress of . . . useful Arts, by securing for limited Times to . . . Inventors the exclusive Right to their . . . Discoveries." U.S. Const., art. I, § 8, cl. 8. There is little evidence in the historical record about

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[3] It should be understood that the citations to Lundgren are to the discussion and cases cited: the remarks of the concurrence/dissent have only persuasive value.

what is meant by the "useful arts," but it appears intended to refer to "arts" used in industry and the production of goods. See Alan L. Durham, "Useful Arts" in the Information Age, 1999 BYU L. Rev. 1419 (1999).

(2) "Technological arts" is the modern equivalent of "useful arts" in the Constitution. Lundgren, 76 USPQ2d at 1393-94.

(3) "Technology" is defined as the totality of means employed to provide objects necessary for human sustenance and comfort. Id. at 1394. The definition of "engineering" as "the application of science and mathematics by which the properties of matter and the sources of energy in nature are made useful to man in structures, machines, products, systems, and processes" (emphasis added) is considered a good description of "technology" and the "useful arts." Id.

(4) The "useful arts" provision in the Constitution is implemented by Congress in the statutory categories of eligible subject matter in 35 U.S.C. § 101: "process, machine, manufacture, or composition of matter, or any new and useful improvements thereof." Id. at 1396-97. The "utility" requirement of § 101 is separate from the eligible subject matter requirement. Id. at 1396.[4]

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[4] The Constitution authorizes Congress "To promote the Progress of . . . useful Arts." This provision can be mapped onto the statutory provisions as follows: "Arts" corresponds to the eligible statutory subject matter classes of "process, machine, manufacture, or composition of matter" in § 101 ("art" in the statute before 1952 had a different meaning than "useful arts" in the Constitution and was interpreted as practically synonymous with process or method, S. Rep. No. 1979, reprinted in 1952 U.S. Code Cong. & Admin. News at 2398); in the Constitution corresponds to the "useful" (utility) requirement in §101;

(5) The terms "invents" and "discovers" in § 101 are interpreted to require "invention," which is the conception and production of something that did not before exist, as opposed to "discovery," which is to bring to light that which existed before, but which was not known. Id. Of course, the practical application of a discovery of a law of nature may be patentable.

(6) The oft-quoted statement that "Congress intended statutory subject matter to 'include anything under the sun that is made by man'" Diamond v. Diehr, 450 U.S. 175, 182, 209 USPQ 1, 6 (1981), quotes from S. Rep. No. 1979, reprinted in 1952 U.S. Code Cong. & Admin. News at 2399:

> A person may have "invented" a machine or manufacture, which may include anything under the sun made by man, but it is not necessarily patentable under section 101 unless the conditions of the title are fulfilled.

This sentence does not mention a "process" or a "composition of matter."[5] A "manufacture" has long

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"progress" in the Constitution corresponds to the "new" requirement in §101 which is defined in the conditions of novelty under § 102 and nonobviousness under § 103. The utility requirement is separate from the eligible subject matter requirement in § 101. See, eg., Fisher, 421 F.3d at 1378, 76 USPQ2d at 1236 (expressed sequence tag (EST) is a composition of matter that does not meet utility requirement of §101).

[5] As discussed by Justice Breyer at the oral argument in Labcorp (transcript on "http://www.supremecourtus.gov/oral_arguments/argument_transcripts.html," Argument 04-607, argued 3/21/06, p. 43, line 16, to p. 44, line 4):

> JUSTICE BREYER: Does that fall within it? I mean, I can't resist pointing, as one of these briefs did, the phrase anything under the sun that is made by man comes from a

been defined to be "anything made 'by hands of man' from raw materials, whether literally by hand or by machinery or by art." In re Hruby, 373 F.2d 997, 1000, 153 USPQ 61, 65 (CCPA 1967), discussing Riter- Conley Mfg. Co. v. Aiken, 203 F. 699 (3d Cir. 1913). We have no doubt that Congress intended statutory subject matter to include any tangible thing made by man, including man-made compositions of matter and man-made living organisms. However, there is a fundamental difference in nature between "machines, manufactures, or compositions of matter," which are things, and a "process," which refers to acts. Lundgren, 76 USPQ2d at 1397. It is not clear that "anything under the sun made by man" was intended to include every series of acts conceived by man.

(7) "Machines, manufactures, and compositions of matter," as defined by the Supreme Court, refer to physical things having physical structure or substance. Id. at 1397. Machines, manufactures, and man-made compositions of matter broadly cover every possible "thing made by man." Id.

A statutory subject matter problem in these categories arises only in the "special case" of transformation of data by a general purpose machine (e.g., a general purpose computer) claimed as a machine or a

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committee report that said something different. It said a person may have invented a machine or a manufacture, which may include anything under the sun that is made by man.

So referring to that doesn't help solve the problem where we're not talking about a machine or a manufacture. Rather we are talking about what has to be done in order to make an abstract idea fall within the patent act. Now, sometimes you can make that happen by connecting it with some physical things in the world and sometimes you can't.

machine-implemented process, or a manufacture (a computer program embodied in a tangible medium which is capable of performing certain functions when executed by a machine).[6] Where the

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[6] The "special case" arises where the claim recites a programmed general purpose "machine" (*e.g.*, a "computer" or "system"), instead of a new structure; i.e., where what applicant claims is the method to be performed on a known machine. The CCPA and the Federal Circuit have held that a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions. See In re Alappat, 33 F.3d 1526, 1554, 31 USPQ2d 1545, 1558 (Fed. Cir. 1994) (en banc). Nevertheless, a programmed general purpose machine which merely performs an abstract idea, such as a mathematical algorithm, has been held nonstatutory as an attempt to patent the abstract idea itself, see Gottschalk v. Benson, 409 U.S. 63, 71-72, 175 USPQ 673, 676(1972) ("nutshell" holding) and In re de Castelet, 562 F.2d 1236, 1243, 195 USPQ 439, 445 (CCPA 1977) (discussing "nutshell" language), whereas a claim directed to a new machine structure is clearly a patentable "machine" under § 101.

Although a case has not yet been presented, we believe that a similar "special case" exists for "manufactures" which store programs that cause a machine to perform an abstract idea, *e.g.*, a computer program to perform a mathematical algorithm stored on a tangible medium: the nominal recitation of a "manufacture" does not preclude the claim from being nonstatutory subject matter, just as the nominal recitation of a "machine" does not preclude a claim from being nonstatutory subject matter. Normally, "functional descriptive material," such as data structures and computer programs, on a tangible medium qualifies as statutory subject matter and the nature of the recorded material may not be ignored under the "printed matter" doctrine. See Examination Guidelines for Computer-Related Inventions, 61 Fed. Reg. 7478, 7481-82 (February 28, 1996), 1184 Off. Gaz. Patent and Trademark Office (O.G.) 87, 89 (March 26, 1996) (defining "functional" and "nonfunctional descriptive material"); In re Lowry, 32 F.3d 1579, 32 USPQ2d 1031 (Fed. Cir. 1994). However, applicants should not be able to evade § 101 by a nominal claim to structure. Computer programs are distintransformation of data represents an "abstract idea" (e.g., a mathematical algorithm), the fact that the claimed subject matter would otherwise be considered statutory because it nominally recites a "machine" or machine implemented "process" or "manufacture" storing information to be read by a machine, will not prevent the claim from being held unpatentable. Id. at 1407-08 (citing cases where machine claims for performing mathematical algorithms were held nonstatutory).

(8) A "process" is the most difficult category of § 101 to define. Id. at 1398. Not every process in the dictionary sense constitutes a "process" under § 101. Id. When Congress approved changing "art" to "process" in the 1952 Patent Act, it incorporated the definition of "process" that had evolved in the courts. Id. "Art" in the pre-1952 statute is not the same as the "useful arts" in the Constitution. See footnote 4. The Supreme Court has arguably defined a "process" as "an act, or series of acts, performed on the subject matter to be transformed and reduced to a different state or thing." See Lundgren, 76 USPQ2d at 1398. The subject matter transformed may be tangible (matter) or intangible (some form of energy, such as the conversion of electrical signals or the conversion of heat into other forms of energy (thermodynamics)), but it must be physical. Id. at 1398-99. The transformation test also conforms to many individuals'

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guished from passive non-functional descriptive material stored on a medium (e.g., music or information stored on a compact disc), which is usually addressed as "printed matter" under § 103. But see Alappat, 33 F.3d at 1554, 31 USPQ2d at 1566 (Archer, C.J., concurring in part and dissenting in part) ("The discovery of music does not become patentable subject matter simply because there is an arbitrary claim to some structure.").

expectations that they only have to worry about patent infringement when dealing with methods associated with industry and the production of goods. The transformation definition of a "process" provides an objective test to analyze claims for statutory subject matter because one can identify, analyze, and discuss what and how subject matter is transformed.

The transformation test is not without problems as evidenced by the dissent in Labcorp, where the question was whether a "test" step that required a physical transformation of a blood sample made the claim statutory. Justice Breyer stated that "the process described in claim 13 is not a process for transforming blood or any other matter," Labcorp, 126 S. Ct. at 2927, 79 USPQ2d at 1070, which can be interpreted to mean that while the test step might require a transformation, no physical transformation steps are recited, and/or that the claim as a whole is not directed to a transformation (it is not to a method of performing a test). The CCPA and the Federal Circuit have addressed such limitations as "data gathering" steps. Lundgren, 76 USPQ2d at 1427-28.

(9) A generally recited "process" claim is not limited to the means disclosed for performing it. Id. at 1400-01. Methods tied to a machine generally qualify as a "process" under § 101 because machines inherently act on and transform physical subject matter, id. at 1400, and new uses for known machines are a "process" under 35 U.S.C. § 100 (b). The principal exception is the "special case" of general purpose machine-implemented processes that merely perform an "abstract idea" (the best known example of which is a mathematical algorithm); see id. at 1407-08 (cases where machine-implemented process claims for performing mathematical algorithms were

held nonstatutory). Statutory processes are evidenced by physical transformation steps, such as chemical, electrical, and mechanical steps. Id. at 1401. A statutory "process" involving a transformation of physical subject matter can be performed by a human. Id. at 1400-01. Not every step requiring a physical action results in a patentable physical transformation, e.g., "negotiating a contract," "convening a meeting, etc." Id.

(10) Some subject matter, although invented by man, does not fall within any of the four categories of § 101, e.g., data structures, computer programs, documents, music, art, and literature, etc. Id. at 1401-02.

(11) The judicially recognized exclusions are limited to "laws of nature, natural phenomena, and abstract ideas." Id. at 1402-03. There are no separate "mathematical algorithm" or "business method" exclusions. Id. Of course, this does not mean that "mathematical algorithms" and "business methods" are necessarily statutory, but only that claims cannot be rejected just because they contain mathematical steps or business concepts: the analysis must be framed in terms of the three recognized exclusions.

(12) "Laws of nature" and "natural phenomena" exclusions can be explained by the fact that the "discovery" of a preexisting law of nature, a principle of physical science, or a natural phenomenon does not meet the "invents" requirement of § 101: they are not inventions "made by man," but are manifestations of nature, free to all. Id. at 1403.

(13) "Abstract ideas" refer to disembodied plans, schemes, or theoretical methods. Id. at 1404. "Abstract ideas" can represent a discovery of a "law of nature" or a "physical phenomenon" or a man-made

invention.[7] Id. Mathematical algorithms are the most well known example of an abstract idea, but there is no reason why the abstract idea exception should be limited to mathematical algorithms. Id. Abstract ideas are usually associated with method claims because a "machine, manufacture, or composition of matter" are tangible things and not disembodied concepts. Abstract ideas performed on general purpose machines or embodied in a generic manufacture constitute a "special case" where subject matter that appears to be nominally within § 101 is nonstatutory.

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[7] Judge Rader states:

> In determining what qualifies as patentable subject matter, the Supreme Court has drawn the distinction between inventions and mere discoveries. On the unpatentable discovery side fall "laws of nature, natural phenomena, and abstract ideas." On the patentable invention side fall anything that is "not nature's handiwork, but [the inventor's] own." [Citations omitted.]

Alappat, 33 F.3d at 1582, 31 USPQ2d at 1590 (Rader, *J.*, concurring). There is no question that any "machine, manufacture, or [man-made]-composition of matter" is a man-made physical thing, not a law of nature, natural phenomenon, or abstract idea, and is patentable eligible subject matter under § 101 (subject to the "special case" of general purpose machines and manufactures that merely perform "abstract ideas"). However, we disagree with Judge Rader's statement to the extent it implies that everything conceived by man and claimed as a method is a patentable invention. Unpatentable "abstract ideas" can represent "inventions" made by man as well as "discoveries" of things that existed in nature, and are easily claimed as a series of steps so as to appear to be a "process" under § 101. For example, mathematical algorithms (the best known example of an abstract idea) can be "abstract ideas" that do not represent a discovery of something that existed in nature. See In re Meyer, 688 F.2d 789, 794-95, 215 USPQ 193, 197 (CCPA 1982) ("However, some mathematical algorithms and formulae do not represent scientific principles or laws of nature; they represent ideas or mental processes and are simply logical vehicles for communicating possible solutions to complex problems."). A claim to a method of government would appear to be an unpatentable abstract political idea even though it is a creation of human thinking that can be claimed as a method. Not every claim to a series of steps "invented by man" is a "process" under § 101.

One possible identifying characteristic of an abstract idea is the lack of transformation of any physical subject matter according to the definition of a "process" under § 101 described supra. Another possible identifying characteristic is if the claim is so broad that it covers (preempts) any and every possible way that the steps can be performed, because there is no "practical application" if no specific way is claimed to perform the steps. Id. at 1405. This may be illustrated by the claim discussed in the dissent in Labcorp, where the "words 'assaying a body fluid' refer to the use of any test at all, whether patented or not patented,"126 S. Ct. at 2924, 79 USPQ2d at 1067, and "Claim 13 . . . tells the user to use any test at all," – *id.* at 2927, 79 USPQ2d at 1070. See also Tilghman v. Proctor, 102 U.S. 707, 726-27 (1880) (discussing overbreadth of Morse's eighth claim in O'Reilly v. Morse, 56 U.S. 62 (1854) compared to the scope of enablement). Incidental physical limitations, such as data gathering, field of use limitations, and post-solution activity are not enough to convert an "abstract idea" into a statutory "process." Lundgren, 76 USPQ2d at 1405 and 1427-28. A method may not be considered an "abstract ideal" if it produces an objectively measurable result (*e.g.*, a contract as a result of a negotiation method or a slower heartbeat as a result of a meditation technique), but it may still not qualify as a "process" under § 101 if it does not perform a transformation of physical subject matter.

(14) "Laws of nature, natural phenomena, and abstract ideas" can be thought of as "exclusions" or "exceptions," but the terms are not necessarily synonymous. An "exclusion" refers to subject matter that is not within § 101 by definition. See, e.g., Diamond v. Diehr, 450 U.S. at 185, 209 USPQ at 7 ("This Court has undoubtably recognized limits to §101 and every discovery is not embraced within the statutory terms. Excluded from such patent protection are laws of nature, physical phenomena and abstract ideas." (Emphasis added.)). The term "exclusion" (from the Latin, "to shut out") carries more of the connotaton a definition that does not encompass certain subject matter. An "exception" (from the Latin, "to take out") tends to refer to subject matter that would fall within § 101 "but for" some exceptional condition. The cases, like ordinary language, do not make strong distinctions between the two words and they tend to use them interchangeably. When the point of view is clear, the distinction is without a difference. Lundgren, 76 USPQ2d at 1405.

A great deal of confusion—not to say mischief—may arise when advocates (or decision makers) mistake the analytical process for the subject matter. For example, the position that not every series of steps is a "process" under § 101 is consistent with the idea that "abstract ideas" are excluded from § 101. On the other hand, if every series of steps is a "process" under § 101, then, in order to preserve the Supreme Court precedent that abstract thoughts are not patentable, it is necessary to recognize that certain "processes" are exceptions to the general rule.

(15) There is a long history of mathematical algorithms as abstract ideas before State Street and AT&T. Id. at 1406-11. One of the main issues after

Gottschalk v. Benson was the "special case" of determining when machine claims (including apparatus claims in "means-plus-function" format) and machine implemented process claims, which recited mathematical algorithms, were unpatentable. This led to the two-part Freeman-Walter-Abele test. Id. at 1409-10.

(16) We interpret the State Street and AT&T test of a "useful, concrete and tangible result" to be limited, at present, to claims to machines and machine-implemented processes, i.e., to the "special cases" of claims that might be within § 101 because they recite structure, but which involve an abstract idea issue. Id. at 1411-13. The Federal Circuit recognized that "certain-types of mathematical subject matter, standing alone, represent nothing more than abstract ideas until reduced to some type of practical application, *i.e.*, 'a useful, concrete and tangible result.'" State Street, 149 F.3d at 1373, 47 USPQ2d at 1600-01 (citing In re Alappat, 33 F.3d at 1544, 31 USPQ2d at 1557). The full statement in Alappat reads: "This [claimed invention] is not a disembodied mathematical concept which may be characterized as an 'abstract idea,' but rather a specific machine to produce a useful, concrete, and tangible result." (Emphasis added.) Alappat, 33 F.3d at 1544, 31 USPQ2d at 1557. Alappat, Arrhythmia Research Technology Inc. v. Corazonix Corp., 958 F.2d 1053, 22 USPQ2d 1033 (Fed. Cir. 1992), State Street, and AT&T all involved transformation of data by a machine. The court specifically held that transformation of data representing some real world quantity (a waveform in Alappat, an electrocardiograph signals from a patient's heartbeat in Arrhythmia, or discrete dollar amounts in State Street) by a machine was a practical application of a mathematical algorithm,

formula, or calculation that produced "a useful, concrete and tangible result," and that a method of applying a PIC indicator "value through switching and recording mechanisms to create a signal useful for billing purposes," AT&T, 172 F. 3d at 1358, 50 USPQ2d at 1452, a machine-implemented process, was "a useful, concrete, tangible result." See Lundgren, 76 USPQ2d at 1411-16 (APJ Barrett, concurring-in-part and dissenting-in-part) (holding that the State Street test, so far, is limited to transformation of data by machines and machine-implemented processes). The test in Alappat may derive from the classical definition of a "machine": "The term machine includes every mechanical device or combination of mechanical powers and devices to perform some function and produce a certain effect or result." Corning v. Burden, 56 U.S. 252, 267 (1854).

However, the fact that the court in AT&T commented on In re Grams, 888 F.2d 835, 12 USPQ2d 1824 (Fed. Cir. 1989), and In re Schrader, 22 F.3d 290, 30 USPQ2d 1455 (Fed. Cir. 1994), which both involved non-machine-implemented process claims, as being "unhelpful" because they did not ascertain if the end result of the claimed process was useful, concrete, and tangible, AT&T, 172 F.3d at 1360, 50 USPQ2d at 1453, leaves open the question of whether the "useful, concrete and tangible result" test is intended to be extended past the original facts of the machine-implemented invention.

(17) Justice Breyer in his dissent in Labcorp stated in dicta that it is highly questionable whether the "useful, concrete and tangible result" test is a general test for statutory subject matter: "[State Street] does say that a process is patentable if it produces a 'useful, concrete, and tangible result.' 149 F.3d, at

1373. But this Court has never made such a statement and, if taken literally, the statement would cover instances where this Court has held the contrary." 126 S. Ct. at 2928.

(18) None of Alappat, State Street, or AT&T states where the "useful, concrete and tangible result" terms come from or how they are defined. It seems that "concrete" and "tangible" have essentially the same meaning, and that a "concrete and tangible result" is just the opposite of an "abstract idea." The term "useful" appears to refer to the requirement in § 101, which is a separate requirement from the patent eligible subject matter requirement. Id. at 1416. Thus, it is not clear to us what is meant by the test. It may be that the test is merely a restatement of existing principles rather than a completely new test. Id. Transformation of data by a machine which represents an abstract idea (for example, but not limited to, a mathematical algorithm) is not statutory just because it is nominally claimed as a machine or a machine-implemented process. Id. at 1407-8. Such "special cases" have always been difficult to address. For now, we interpret the State Street and AT&T test to be a test for when transformation of data by a machine is statutory subject matter. The test could be clarified by the facts of the cases: (1) transformation of data (i.e., electrical signals representing data) is by a machine; (2) the data corresponds to something in the "real world"; and (3) no physical acts need to occur outside of the machine (internal transformation of electrical signals by the machine is sufficient). Id. at 1411. If the Federal Circuit intends to create a new general test for statutory subject matter regardless of whether it involves transformation of data (signals) by a machine, then further explanation in an appropriate case is needed.

(19) Non-machine-implemented process claims present additional issues to analyze for statutory subject matter. "Process" claims recite acts and are fundamentally different from "machine, manufacture, or composition of matter" claims, which recite things. Process claims do not have to recite structure for performing the acts. Acts are inherently more abstract than structure. While there is seldom disagreement about physical things falling into one of the statutory classes, it is not always easy to determine when a series of steps is a statutory "process" under § 101.

Where the steps define a transformation of physical subject matter (tangible or intangible) to a different state or thing, as normally present in chemical, electrical, and mechanical cases, there is no question that the subject matter is statutory; e.g., "mixing" two elements or compounds is clearly a statutory transformation that results in a chemical substance or mixture although no apparatus is claimed to perform the step and although the step could be performed manually. Id. at 1417.

(20) There are several issues that complicate analysis of non-machine-implemented processes: (1) a claim that is so broad that it covers both statutory and nonstatutory subject matter; (2) the statement in In re Musgrave, 431 F.2d at 893, 167 USPQ at 289-90, that it makes no difference whether steps are performed by a machine or mentally, as long as they are in the "technological arts"; (3) how to determine when a transformation of physical subject matter takes place; (4) whether minor physical limitations can define a statutory process; and (5) whether methods that can only be performed by a human, e.g.,

sports moves, are patentable subject matter. Lundgren, 76 USPQ2d at 1417.

(21) Although this question does not appear to have been formally decided by the Federal Circuit, we are of the opinion that claims that read on statutory and nonstatutory subject matter should be rejected as unpatentable. Id. at 1417-24. This problem is most critical in method claims because method claims do not have to recite what structure is used to perform the steps, making them abstract in nature, whereas claims to things, "machines, manufactures, or compositions of matter," easily fall within § 101 (subject to the "special case" of abstract ideas performed on machines). The USPTO rejects method claims when they are interpreted to be so broad that they are directed to the abstract idea itself, rather than a practical implementation thereof; e.g., a series of steps without any recitation of how the steps are performed might be rejected as nonstatutory subject matter as an "abstract idea," whereas the same series of steps, if performed by a machine, might be statutory as a practical application of the abstract idea.

(22) The "technological arts" test for statutory subject matter originated in response to "mental steps" rejections. Where the steps of the claim were so broad that they could be performed mentally by a human operator (although the claim did not recite how the steps were performed), the claim was rejected as not defining statutory subject matter even though if the steps were performed by a machine it would constitute statutory subject matter. This is the situation of the claims reading on statutory and nonstatutory subject matter. The court in Musgrave declined to follow the approach of previous cases of determining whether the claim, interpreted reasona-

bly, read upon mental implementation of the process or was confined to a machine implementation. Id. at 1419. The court held that process claims which could be done by purely mental processes (what might today be called "abstract ideas"), as well as by machine, were statutory as long as the steps were in the "technological arts." Id. at 1420. It was not explained how "technological arts" were to be determined. Judge Baldwin concurred, objecting to the majority's analysis and writing, "suppose a claim happens to contain a sequence of operational steps which can reasonably be read to cover a process performable both within and without the technological arts? This is not too far fetched. Would such a claim be statutory? ... We will have to face these problems some day." Musgrave, 431 F.2d at 896, 167 USPQ at 291. This test, as a separate test, seems to have been implicitly overruled by Gottschalk v. Benson. Lundgren, 76 USPQ2d at 1425.

The Board held in Lundgren that the "technological arts" test is not a separate and distinct test for statutory subject matter. Id. at 1388. Although commentators have read this as eliminating a "technology" requirement for patents, this is not what was stated or intended. As APJ Barrett explained, "[t]he 'technology' requirement implied by 'technological arts' is contained within the definitions of the statutory classes." Id. at 1430. All "machines, manufactures, or [man-made] compositions of matter" are things made by man and involve technology. Methods which define a transformation of physical subject matter from one state or thing to another involve technology and qualify as a statutory "process" under § 101. The definitions of the statutory classes and application of the exclusions are the proper tests. A process may involve technology because it meets the transformation of physical subject matter definition of a "process" under §101, even though it does not require performance by a machine. Id. at 1428. The "technological arts" is not a useful, objective test because it was never defined as anything except as a more modern term for the "useful arts." The use of such a test would result in conclusory rejections, which are unreviewable, just as many claims in the past were rejected as "business methods" because they involved some business aspect (e.g., accounting).

(23) Not all physical limitations in a claim directed to an abstract idea (e.g., a mathematical algorithm) were sufficient to define a statutory process prior to State Street. This case law regarding data gathering, field-of-use limitations, and post-solution activity, which includes Supreme Court precedent, should still apply to determining whether non-machine-implemented process claims are directed to an abstract idea or a practical application of that idea. Id. at 1427-28; cf. Labcorp, 126 S. Ct. at 2927-28 (initial step of "assaying a body fluid" does not render the claim patentable). It is difficult to determine when such steps are enough to define statutory subject matter.

(24) Claims that can only be performed by a human, such as dance and sports moves, meditation techniques, etc., present difficult questions under— 101. Id. at 1428-29. Surgical methods are performed by humans, but since they involve the application of scientific medical knowledge to transform human and animal tissue they are readily classifiable as a type of manufacturing process. Id. at 1429. This issue is not present in this case, but we believe any judicial review of this decision should recognize that the present case is only one in a broad spectrum of cases

involving what the USPTO perceives to be nonstatutory subject matter.

(25) The concurrence/dissent in Lundgren concludes that there are three possible existing tests for statutory subject matter of non-machine-implemented methods: (1) the definition of a "process" under, § 101 requires a transformation of physical subject matter (which is interpreted to mean matter or some form of energy) to a different state or thing; (2) the judicially recognized exclusions for "abstract ideas, laws of nature, or natural phenomena"; and (3) the "useful, concrete and tangible result" test of State Street. Id. at 1429-30.

(26) In summary, the concurrence/dissent in Lundgren makes the following conclusions about non-machine-implemented method claims, which hopefully will be addressed by the Federal Circuit.

(a) Not every process in the dictionary sense is a "process" under § 101; i.e., not every series of steps is a "process" under § 101.

(b) The definition of a "process" under § 101 requires a transformation of physical subject matter to a different state or thing.

(i) The physical subject matter transformed can be matter (an object or material) or some form of energy (e.g., heat into mechanical motion; electromagnetic waves progagating in space into electrical current in a wire; etc.).

(c) The oft-quoted statement that "Congress intended statutory subject matter to 'include anything under the sun that is made by man,'" is based on the Senate Report statement that "[a] person may have 'invented' a machine or manufacture, which may include anything under the sun made by man." The Senate Report indicates that things made by man ("machines, manufactures, or [man-made] compositions of matter") are statutory, but does not imply that Congress intended every concept conceived by man that can be claimed as a method to be patentable subject matter.

(d) Some claims that nominally fall within § 101 because they recite a general purpose machine or a method performed on a general purpose machine (e.g., "a computer-implemented method comprising ...") may nonetheless be nonstatutory subject matter if all that is performed is an "abstract idea." This is a "special case" because the subject matter is technically within § 101 by virtue of the machine, as opposed to an exclusion that was never within § 101.

(e) "Abstract ideas" can represent ideas "made by man."

(f) Possible indicia of an "abstract idea" may be (i) the lack of transformation of physical subject matter according to the definition of a "process" under § 101, and/or (ii) the claim covers (preempts) any and every possible way that the steps can be performed.

(g) Physical steps or limitations in a claim are not necessarily sufficient to convert the claim into statutory subject matter, e.g., data-gathering steps, field of use limitations, and minimal post-solution activity.

(h) It is possible that a non-machine-implemented method may be nonstatutory subject matter if it does not perform a transformation of physical subject matter even though it contains physical steps that might prevent if from being labeled an "abstract idea."

(i) The holding of State Street is limited to transformation of data by a machine.

(j) AT&T involved a machine-implemented process claim.

(k) The "useful, concrete and tangible result" test of State Street and AT&T is presently limited to machine claims and machine-implemented process claims.

(l) The terms "useful, concrete and tangible" have not yet been defined.

(m) During prosecution, claims that read on statutory and nonstatutory subject matter should be held to be unpatentable.

(n) There is no separate "technological arts" test for statutory subject matter.

Interim Guidelines

After Lundgren, the USPTO published Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility (Interim Guidelines), 1300 Off. Gaz. Patent and Trademark Office (O.G.) 142 (Nov. 22, 2005). The Interim Guidelines do not track the analysis in Lundgren, which principally focused on non-machine-implemented method claims The Interim Guidelines indicate that statutory subject matter: (1) must fall within one of the statutory categories of § 101, 1300 O.G. at 145; and (2) must not fall within one of the judicially recognized exceptions for "laws of nature, natural phenomena, and abstract ideas," id. The Interim Guidelines state that while "laws of nature, natural phenomena, and abstract ideas" are not eligible for patenting, a practical application may be patented, id. A practical application can be identified by tests: (a) a physical transformation of an article to a different state or thing, id. at 146; or (b) the production of a "useful, concrete and tangible result," id., i.e., the State Street test applied to all claims, whether or not machine-implemented. The Interim Guidelines also state that (c) the claim must not preempt every "substantial practical application" of the of nature, natural phenomena, or abstract idea, id.

Guidelines are intended to instruct examiners on how to apply the law to the facts. The Board is not bound by such guidelines,[8] but applies the law directly to the facts. The Interim Guidelines state: "Rejections will be based upon the substantive law and it is these rejections which are appealable. Consequently, any failure by USPTO personnel to follow the Guidelines is neither appealable nor petitionable." Id. at 142, under "Introduction." Although the analysis will apply the Interim Guidelines in the alternative, this exercise underscores, for this panel, several problems with the Interim Guidelines that limit their usefulness severely.

First, the Interim Guidelines implicitly concede that any series of steps is a "process" under § 101 and does not address the case law that says that not every process in the dictionary sense is a "process" under § 101. See Gottschalk v. Benson, 409 U.S. at 64, 175 USPQ at 674 ("The question is whether the method described and claimed is a 'process' within the meaning of the Patent Act."); Parker v. Flook, 437 U.S. 584, 588 n.9, 198 USPQ 193, 196 n. 9 (1978) ("The statutory definition of 'process' is broad.... An argument can be made, however, that this Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a 'different state or thing.'"); id. at 589, 198 USPQ at 197 ("The holding [in Gottschalk v. Benson] that the discovery of that method could not be patented as a 'process' forecloses a purely literal reading of § 101."); Lundgren, 76 USPQ2d at 1398-1401. "Process" claims are inherently more abstract than "machine, manufacture, or composition of matter" claims, which are directed to physical things, because a "process" is not limited to, or required to recite, the means for performing the steps. Id. at 1400-01. If it is conceded that every series of steps is a "process" under § 101, then one possible statutory subject matter test is lost.

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[8] From the movie Pirates of the Caribbean (Disney 2003):

> Elizabeth: You have to take me to shore! According to the Code of the Order of the Brethren.
>
> Barbossa: First, your return to shore was not part of our negotiations nor our agreement, so I 'must' do nothin'. And secondly, you must be a pirate for the pirate's code to apply, and you're not. And thirdly, the code is more what you call guidelines than actual rules. Welcome aboard the Black Pearl, Miss Turner.

Second, the Interim Guidelines do not provide any directions for how examiners should determine whether the claimed invention is to an "abstract idea, law of nature, or natural phenomenon" except by finding that it is not a practical application as defined by tests (a), (b), and (c). The Interim Guidelines treat "abstract ideas, laws of nature, or natural phenomena" as exceptions rather than exclusions, i.e., claims are statutory "but for" some condition.

Third, the Interim Guidelines state that a transformation or reduction of an article to a different state or thing is a statutory practical application. Interim Guidelines, 1300 O.G. at 146. This perpetuates the misunderstanding that "transformation" requires transformation of a tangible object or article, contrary to cases that explain that the subject matter transformed can be physical, yet intangible, phenomena such as electrical signals. See In re Schrader, 22 F.3d 290, 29 §n.12, 30 UPSQ2d 1455, 1459 n.12 (Fed. Cir. 1994) ("In the Telephone Cases, 126 U.S. 1 ... (1887), the Court upheld the validity of a claim directed to a method for transmitting speech by impressing acoustic vibrations representative of speech onto electrical signals. If there was a requirement that a physical object be transformed or reduced, the claim would not have been patentable. ... Thus, it is apparent that changes to intangible subject matter representative of or constituting physical activity or objects are included in this definition"); Lundgren, 76 USPQ2d at 1398-99.

Fourth, the Interim Guidelines adopt the "useful, concrete and tangible result" test of State Street as a general test for patentable subject matter without addressing the fact that the holding of State Street was qualified by transformation of data by a machine and that AT&T involved a machine-implemented process claim. Id. at 1411-13. It may be that the State Street test can be adapted as a general test, but the factual differences between machine claims or machine-implemented process claims and nonmachine-implemented process claims are significant and have not been addressed by the Federal Circuit. Machines inherently act to transform physical subject matter (tangible or intangible) to a different state or thing. As recognized in the earlier Examination Guidelines for Computer-Related Inventions, 61 Fed. Reg. at 7484, 1184 O.G. at 92: "There is always some form of physical transformation within a computer because a computer acts on signals and transforms them during its operation and changes the state of its components during the execution of a process." Machine-implemented processes nominally fit within the definition of a "process" under § 101, but may not necessarily be statutory under the special circumstances involving transformation of data by a machine, which are addressed by the State Street test. The State Street "useful, concrete and tangible result" test is more readily understood and applied if it is limited to machine claims and machine-implemented process claims, which are already nominally within § 101, because a machine (almost always a programmed computer) that does no more than perform the steps of an abstract idea is not a practical application of the abstract idea. Thus, the State Street test requires that the practical application must be recited in the claims. The fact that an abstract idea is capable of being practically applied, and that a practical application is disclosed, does not make a broad claim to the abstract idea itself patentable. A claim which covers both statutory and nonstatutory subject matter should be held unpatentable, see Lundgren, 76 USPQ2d at 1417-24.

Fifth, the Interim Guidelines attempt to define the terms "useful," "concrete," and 'tangible," but have not cited any support in § 101 cases dealing with patent eligible subject matter. Moreover, the proposed "definitions" seem to be circular and therefore unhelpful. The statutory categories of § 101 ("process, machine, manufacture, or composition of matter") define eligible subject matter, i.e., subject matter that can be patented. The terms "new and useful" in § 101 refer to other conditions for patentability. "It may be useful to think of eligibility as a precondition for patentability, and of utility as one of the three fundamental conditions for patentability, together with novelty ... and nonobviousness ....” Robert L. Harmon, Patents and the Federal Circuit 40 (4th ed. Bureau of National Affairs, Inc. 1998). See Lundgren, 76 USPQ2d at 1395-96. “Notwithstanding the words ‘new and useful’ in § 101, the invention is not examined under that statute for novelty because that is not the statutory scheme of things or the long-established administrative practice.” State Street, 149 F.3d at 1373 n.2, 47 USPQ2d at 1600 n.2 (citing In re Bergy, 569 F.2d 952, 960, 201 USPQ 352, 360 (CCPA 1979)). It seems that the “useful result” part of the State Street test refers to the “utility” requirement of § 101, which is a separate requirement from patent eligible subject matter, yet this is not questioned by the Interim Guidelines. The Interim Guidelines define “tangible” as the opposite of “abstract,” 1300 O.G. at 146, which adds nothing of substance or guidance to the abstract idea exception, and no case is cited for the definition. The Interim Guidelines define “concrete” as the opposite of “unrepeatable” or “unpredictable,” id., yet we find no dictionary that supports this definition. The case cited in support, In re Swartz, 232 F.3d 862, 864, 56 USPQ2d 1703, 1704 (Fed. Cir. 2000) (because asserted results in the area of cold fusion were “irreproducible,” claims were properly rejected under § 101), relates to utility, not to patent eligible subject matter. In our opinion, the terms “concrete and tangible” essentially say the same thing, that the result is not just an “abstract idea,” but is “actual and real.”

Sixth, the Interim Guidelines do not provide any guidance as to how examiners should determine whether the claimed invention preempts an "abstract idea, law of nature, or natural phenomenon."

Analysis

Claim interpretation

The meaning of the claim language is not in dispute.

Technological arts

The Board held in Lundgren that the "technological arts" is not a separate and distinct test for statutory subject matter. Lundgren, 76 USP2d at 1388. Accordingly, the examiner's rejection in this case, to the extent that it is based on a "technological arts" test, is reversed.

Nevertheless, the examiner's reasoning that the method is not technological because no specific apparatus is disclosed to perform the steps and because the only way to perform the steps is by a human is not persuasive. "It is probably still true that, as stated in In re Benson, 'machines—the computers—are in the technological field, are a part of one of our best-known technologies, and are in the "useful arts" rather than the "liberal arts," as are all other types of "business machines," regardless of the uses to which their users may put them,' 441 F.2d at 688, 169 USPQ at 553, with the exception noted in Gottschalk v. Benson, that a machine which executes a mathematical algorithm is not patentable under § 101." Lundgren, 76 USPQ2d at 1416. The cases do not imply that a process is not in the technological arts if it is not performed on a machine. Musgrave, the case the examiner relies on for the "technological arts" test, did not require a machine and, in fact, held that steps performed mentally could be patentable.

Although we disagree that mental steps can be patentable, we conclude that a method performed by a human may be statutory subject matter if there is a transformation of physical subject matter from one state to another; e.g., "mixing" two elements or compounds to produce a chemical substance or mixture is clearly a statutory transformation although no apparatus is claimed to perform the step and although the step could be performed manually.

Application of the Lundgren and Guidelines tests

Lundgren

The three tests identified in the concurrence/dissent in Lundgren are applied below.

(1) Transformation

Claim 1, as is common with method claims, does not recite how the steps of "initiating a series of transactions between said commodity provider and consumers of said commodity," "identifying market participants," and "initiating a series of transactions between said commodity provider and said market participants," are implemented. Appellants acknowledge "that the steps of the method need not be 'performed' on a computer" (Br6) and, thus, there is no implicit transformation of electrical signals from one state to another as happens in a computer. The steps do not transform any physical subject matter (matter or some form of energy) into a different state or thing. Claim 1 does not involve transformation of data, at least not in the usual sense of a specific, well-defined series of steps (i.e., an algorithm) performed on data as in a computer-implemented process. The last clause of claim 1, "such that said series of market participant transactions balances the risk position of said series of consumer transaction," indicates that what are transformed are the nonphysical financial risks and legal liabilities of the commodity provider, the consumer, and the market participants having a counter-risk position to the consumer. Accordingly, the steps of claim 1 do not define a statutory "process" under § 101 using the "transformation" test.

Claim 2 depends on claim 1 and defines the commodity as energy and the market participants as transmission distributors. Claim 3 depends on claim 2 and defines the consumption risk as a weather-related price risk. These claims limit the commodity, the market participants, and the type of risk, but do not add any physical transformation. That the method is limited to a particular environment does not make it statutory subject matter. Cf. Diamond v. Diehr, 450 U.S. at 191, 209 USPQ at 10 ("A mathematical formula as such is not accorded the protection of our patent laws, and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment." (Citations omitted.)). Claims 2 and 3 do not define a statutory "process" under § 101 using the test.

Independent claim 4 is similar to claim 1, as modified by claims 2 and 3, but also defines the "fixed price" in terms of a mathematical expression. The mathematical expression does not add any transformation of physical subject matter. Claim 4 is directed to nonstatutory subject matter because the claim as a whole does not perform a transformation of physical subject matter, not because it contains a mathematical expression.

Claim 5 depends on claim 4 and defines the location-specific weather indicator as at least one of heating degree days and cooling degree days. This merely qualifies the data and does not add a transformation of physical subject matter. Claim 5 does not define a statutory "process" under §101 using the "transformation" test.

Claim 6 depends on claim 4 and states that the energy provider seeks a swap receipt to cover the marginal weather driven cost. It appears that a "swap receipt" is a payment from the other energy market participants, such as a distribution company, involved in the swap (specification, pages 5-6). A swap transaction does not involve a transformation of physical subject matter from one state to another, so claim 6 does not define a statutory "process" under § 101 using the "transformation" test.

Claims 7 and 10 depend on claim 4 and recite steps for determining the energy price. The assumptions and mathematical procedures on data do not recite a physical transformation. The claimed subject matter is unpatentable because it does not define a physical transformation, not because it contains mathematical operations. Claims 7 and 10 do not define a statutory "process" under § 101 using the "transformation" test.

Claims 8 and 11 depend on claim 4 and recite steps for establishing a cap on the weather-influenced pricing. The assumptions and mathematical procedures on data do not define a physical transformation of subject matter. Claims 8 and 11 do not define a statutory "process" under § 101 using the "transformation" test.

Claim 9 depends on claim 1 and states that the commodity provider seeks a swap receipt to cover the price risk of the consumer transaction. As noted with respect to claim 6, a swap receipt does not involve a statutory transformation. Claim 9 does not define a statutory "process" under § 101 using the "transformation" test.

Therefore, claims 1-11 are directed to nonstatutory subject under 35 U.S.C. § 101 under the "transformation" test.

(2) "Abstract idea" exclusion

The subject matter of claim 1 is also directed to an "abstract idea" or, at least, it is nonstatutory because it broadly covers both a nonstatutory "abstract idea" and any specific physical implementation of it that might possibly be statutory. Claim 1 describes a plan or scheme for managing consumption risk cost in terms of a method. It is nothing but an disembodied "abstract idea" until it is instantiated in some physical way so as to become a practical application of the idea. The steps of "initiating a series of transactions" and the step of "identifying market participants" merely describe steps or goals in the plan, and do not recite how those steps are implemented in some physical way: the steps remain disembodied. Because the steps cover ("preempt") any and every possible way of performing the steps of the plan, by human or by any kind of machine or by any combination thereof, we conclude that the claim is so broad that it is directed to the "abstract idea" itself, rather than a practical implementation of the concept. While actual physical acts of individuals or organizations would, no doubt, be required to implement the steps, and while the actual implementation of the plan in some specific way might be considered statutory subject matter, the fact that claim 1 covers both statutory and nonstatutory subject matter does not make it patentable. Thus, we further hold that claim 1 is directed to nonstatutory subject matter under the "abstract idea" exclusion.

We consider the "abstract idea" test to be in addition to the transformation test. There may be times where it is easier to analyze the subject matter as an "abstract idea" or where the "abstract idea" test can be used as a backup check on the transformation test. However, there may be times where the steps cannot fairly be considered an "abstract idea," e.g., because of actual physical steps, but where the claims do not define a transformation of physical subject matter.

Claim 2 depends on claim 1 and defines the commodity as energy and the market participants as transmission distributors. Claim 3 depends on claim 2 and defines the consumption risk as a weather-related price risk. This limits the commodity, the market participants, and the type of risk, but does not describe any particular way of performing the steps that would define a practical application, instead of an abstract idea. Claims 2 and 3 are not patentable because they are to an "abstract idea."

Independent claim 4 is similar to claim 1, as modified by claims 2 and 3, but also defines the "fixed price" in terms of a mathematical expression. A mathematical expression by itself is an abstract idea and, therefore, the combined subject matter is also an "abstract idea." The claimed subject matter as a whole describes an "abstract idea."

Claim 5 depends on claim 4 and defines the location-specific weather indicator as at least one of heating degree days and cooling degree days. This merely qualifies the data and does not define a practical application. Claim 5 is directed to nonstatutory subject matter under the "abstract idea" exclusion.

Claim 6 depends on claim 4 and states that the energy provider seeks a swap receipt to cover the marginal weather-driven cost. It appears that a "swap receipt" is a payment from the other energy market participants, such as a distribution company, involved in the swap (specification, pages 5-6). Since no specific method of seeking the swap receipt is claimed, no practical application of the abstract idea is claimed. Claim 6 is not patentable because it is an "abstract idea."

Claims 7 and 10 depend on claim 4 and recite steps for determining the energy price. Some of the steps involve assumptions and mathematical procedures on data, which are considered an "abstract idea," and the combined subject matter is therefore still an "abstract idea." Claims 7 and 10 are not statutory subject matter because they are an "abstract idea."

Claims 8 and 11 depend on claim 4 and recite steps for establishing a cap on the weather-influenced pricing. Some of the steps involve assumptions and mathematical procedures on data, which are considered an "abstract idea," and the combined subject matter is therefore still an "abstract idea." Claims 8 and 11 are an "abstract idea" and not statutory subject matter.

Claim 9 depends on claim 1 and states that the commodity provider seeks a swap receipt to cover the price risk of the consumer transaction. As noted with respect to claim 6, a swap receipt does not involve a practical application of the abstract idea. Claim 9 is an "abstract idea" and does not define statutory subject matter.

Therefore, claims 1-11 are directed to nonstatutory subject under 35 U.S.C. § 101 as an "abstract idea."

(3) Useful, concrete and tangible result

We held in (1) that the claimed subject matter on appeal does not fall within the definition of a "process" under § 101 because it does not transform physical subject matter to a different state or thing, and held in (2) that it is an "abstract idea." Claim 1 does not recite a "concrete and tangible result" or a "practical application" of the hedging plan under the State Street test, because a "concrete and tangible result" is interpreted to be the opposite of an "abstract idea" and requires some sort of physical instantiation. While the plan may be "useful" in the sense of having potential utility to society, a method that has not been implemented in some specific way is not considered practically useful in a patentability sense. Even if the method is "useful," the State Street test requires the result to be "useful" and "concrete" and "tangible," so merely being "useful" is not enough. In addition, it is the result of the claimed process that must be "useful, concrete and tangible," not just one or more steps. Therefore, we also hold that claim 1 is directed to nonstatutory subject matter because it does not recite a "practical application" or produce a "concrete and tangible result" under the State Street test, to the extent that State Street applies to non-machine-implemented process claims.

Claims 2-11 are also rejected as nonstatutory subject matter because they are directed to an "abstract idea," as discussed, and do not recite a "practical application" or produce a "concrete and tangible result" under the State Street test.

Therefore, claims 1-11 are directed to nonstatutory subject under 35 U.S.C. § 101 because they do not recite a "practical application" or a "concrete and tangible result" under the State Street test.

Interim Guidelines

The Interim Guidelines are applied as follows.

(1) Within a statutory category

The claims are drafted as a series of steps, which the Interim Guidelines considers to be a "process" under § 101.

(2) Judicially recognized exceptions

The Interim Guidelines state that while "laws of nature, natural phenomena, and abstract ideas" are not eligible for patenting, a practical application may be. Only the "abstract idea" category is at issue. The Interim Guidelines say that a practical application can be identified by: (a) a physical transformation of an article to a different state or thing; or (b) the production of a "useful, concrete and tangible result." Presumably, the Interim Guidelines consider the absence of (a) and (b) to indicate an "abstract idea." And, if the claim recites a practical application, (c) it must not preempt every "substantial practical application" of the law of nature, natural phenomena, or abstract idea.

(a) Transformation of article

The claims do not recite a transformation of an article to a different state or thing and, thus, do not recite a practical application under this test. Although we consider this to be too narrow a test, we apply the Interim Guidelines as written.

(b) "Useful, concrete and tangible result"

The Interim Guidelines define these terms, but the definitions are not based on any guidance in State Street or AT&T.

Since the method has use to society, we conclude that it recites a "useful result." It seems that the utility requirement of § 101 is separate from the subject matter eligibility requirement, but this is not analyzed in the Interim Guidelines.

The Interim Guidelines state that "[t]he opposite of 'concrete' is unrepeatable or unpredictable," id., and cite a case dealing with utility under § 101. We do not find this definition of "concrete" in any dictionaries and, in our judgment, a case dealing with utility has little bearing on eligible subject matter. Accordingly, we do not apply this definition.

The Interim Guidelines state that "the opposite meaning of 'tangible' is 'abstract,'" 1300 O.G. at 146, so presumably a "tangible result" is the opposite of an "abstract idea." We determined in the Lundgren analysis that the claims are directed to an "abstract idea." Since the claims must meet all of the conditions of "useful" and "concrete" and "tangible," and claims 1-11 do not produce a "tangible result," they do not pass the "useful, concrete and tangible result test."

Therefore, claims 1-11 are directed to nonstatutory subject under 35 U.S.C. § 101 because they do not recite a "tangible result" under the Interim Guidelines.

(c) Preemption

We determined in the Lundgren analysis of the "abstract idea" exclusion that the claims are directed to the "abstract idea" because they cover any and every possible manner of performing the steps. Thus, it can also be said that the claims "preempt" the concept in the claimed methods. Therefore, claims 1-11 are directed to nonstatutory subject under 35 U.S.C. § 101 because they "preempt" under the Interim Guidelines.

Conclusion

For all of the reasons stated above, we conclude that claims 1-11 are not directed to statutory subject matter under 35 U.S.C. §101. Appellants' arguments, addressed next, have been considered in making this decision, but are not persuasive.

Appellants' arguments

Briefs

Appellants argue that they "are unaware of any requirement, statutory or otherwise, which requires a method claim to specify a specific apparatus upon which the method is to be performed" (Br5) and that "no 'specific apparatus upon which the process can be performed' need be specified when claiming a method" (Br5).

It is true that process claims are not required to recite the means (structure) for performing the steps. See Cochrane v. Deener, 94 U.S. 780, 787 (1877); Lundgren, 76 USPQ2d at 1400-01. Although the examiner rejected the claims as nonstatutory subject matter, in part, because they did not recite a specific apparatus, this does not form any part of the bases for our new ground of rejection. A method claim can be a "process" under §101 even when performed by hand. It is the presence of a transformation of physical subject matter that is important, not how the transformation is accomplished. Nevertheless, the absence of any apparatus in appellants' claims is evidence that the claims do not transform physical subject matter as a machine inherently would, and do not recite a practical application of the "abstract idea."

Appellants note that "[t]he specific computer hard ware or specific software that one might use to implement the process is not part of the invention" (Br6) and acknowledge "that the steps of the method need not be 'performed' on a computer" (Br6). It is argued that while some steps could be done with a computer, or aided by the use of a computer, they need not be (Br7).

This confirms that appellants do not intend to limit the claims to a machine implementation. Cf. In re Prater, 415 F.2d 1393, 162 USPQ 541 (1969) (the court held that process claim 9, which read on a mental process augmented by pencil and paper markings, which appellants acknowledged was not their invention, as well on as a machine implemented process, fails to comply with the requirement of §112, second paragraph, which requires "claims particularly pointing out and claiming the subject matter which the applicant regard as his invention"). The fact that the steps are not performed on a computer does not make the method nonstatutory. However, where, as here, no machine is claimed, there is no implied physical transformation of physical subject matter (e.g., electrical signals) from one state to another that would nominally indicate a statutory process (and invoke the State Street test).

Appellants argue that the Federal Circuit stated in AT&T that "[s]ince the claims at issue in this case are directed to a process in the first instance, a structural inquiry is unnecessary" and, thus, there is no requirement of a specific apparatus on which the process can be performed (Br8; RBr3).

It is true that process claims are not required to recite the means structure for performing the steps. Unlike claims written in means-plus-function language, which require supporting structure in the written description, it is not necessary to inquire whether process steps are supported by physical structure in the specification. However, we contend that a "process" under § 101 must recite steps that transform physical subject matter and must recite more than the "abstract idea."

Appellants argue that the examiner has relied on outdated case law in support of the rejection (Br8-9). In particular, the examiner's reliance on Schrader is argued to be inappropriate because it uses the outdated Freeman-Walter-Abele test which focuses on the "physical limitations" requirement (Br8). It is argued (Br8) that the test for patentable subject matter is whether the end result of the claimed process is "useful, concrete and tangible." It is argued that Warmerdam does not apply because "the claimed method involves steps not directed to the solving of a mathematical equation or algorithm" (Br9).

We agree that the Freeman-Walter-Abele test in Schrader is no longer in vogue because it is no longer required to investigate whether a claim contains a mathematical algorithm. Although the examiner rejected the claims as nonstatutory subject matter, in part, because they "solve[] a purely mathematical problem" (FR4), our new ground of rejection is not based on the presence of mathematical algorithms, but focuses on the lack of a physical transformation and the lack of a practical application of the "abstract idea" of risk management in the claims as a whole. Nevertheless, we briefly comment on Schrader and Warmerdam. The court stated in AT&T that Schrader was because "[t]he focus of the court in Schrader was not on whether the mathematical algorithm was applied in a practical manner since is ended its inquiry before looking to see if a useful, concrete, tangible result ensued," AT&T, 172 F. 3d at 1360, 50 USPQ2d at 1453. It is noted that Judge Plager authored both the AT&T and Schrader opinions. Schrader was to a nonmachine-implemented method of conducting an auction and Warmerdam was to a non-machine-implemented method for generating a data structure. It is not clear why the "practical application, i.e., 'a useful, concrete and tangible result'" test would necessarily be definitive in these situations since State Street and AT&T both involved transformation of data by a machine.

Appellants note that the examiner stated that the method was not drawn to the "technological arts" "because the specification does not disclose specific hardware or software" (Br9). It is argued that "[c]ase law has addressed the issue of whether or not an apparatus is required for a process to be in the "technological arts"' (Br9). It is urged (Br10) that "technological arts" is synonymous with "useful arts" as it appears in Article 1, Section 8 of the Constitution, citing Musgrave and Waldbaum, 457 F.2d 997, 173 USPQ 430 (CCPA 1972). Therefore, it is argued (Br10):

> One can therefore conclude that no special meaning need be given to the phrase "technological arts," a phrase that has been devised and defined by the courts, apart from the Constitutional requirement that an invention be in the "useful arts." It is clear from Musgrave that no apparatus need be specified for a process that can be carried out by a human without the aid of

> an apparatus, as can the present invention under appeal.

We agree with appellants that "technological arts" means "useful arts" as stated in the Constitution, and that apparatus is not required to be claimed in order for a method claim to be a "process" under § 101. The Board held in Lundgren that "technological arts" is not a separate and distinct test for statutory subject matter. Although commentators have read this as eliminating a "technology" requirement for patents, this is not what was stated or intended. "The 'technology' requirement implied by 'technological arts' is contained within the definitions of the statutory classes." Lundgren, 76 USPQ2d at 1430. All "machines, manufactures, or [man-made] compositions of matter" are things made by man and involve technology. Methods which recite a transformation of physical subject matter from one state or thing to another, and which do not fall within one of the exclusions for "laws of nature, physical phenomena, and abstract ideas" involve technology and are a "process" under § 101. In our opinion, the statement in Musgrave that a process that can be performed mentally or by a machine is statutory subject matter as long as it is in the "technological arts" has been implicitly overruled because it has never been adopted by the Supreme Court in Gottschalk v. Benson or subsequent cases, and the CCPA and the Federal Circuit have not continued to apply this line of reasoning. A method that is so broadly claimed that it reads on performing the steps mentally should be considered an "abstract idea."

Appellants argue that "[t]he claimed method is patentable because it produces a 'useful, concrete and tangible result'" (Br10). Appellants refer to the following statement in State Street, 149 F.3d at 1373, 47 USPQ2d at 1601:

> Today, we hold that the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces "a useful, concrete and tangible result" a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.

It is argued that "even if the present claimed method only calculated 'first and second fixed rates' as it does in the steps (a) and (c), the method would be patentable, because the fixed rates would be considered a 'useful, concrete and tangible result' as was the share price in State Street [ ] (here, the fixed rates calculate represent a 'risk position')" (Br11).

Appellants fail to note that the holding in State Street is clearly limited to "transformation of data ... by a machine." AT&T involved a machine-implemented process. Machines are physical things that nominally fall within the class of a "machine" in § 101, and machine-implemented methods inherently act on and transform physical subject matter, such as objects or electrical signals, and nominally fall within the definition of a "process" under § 101. No machine is required by the present claims. Until instructed otherwise, we interpret State Street and AT&T to address the "special case" of subject matter that nominally falls within § 101, a general purpose machine or machine-implemented process, but which is nonetheless unpatentable because the machine performs an "abstract idea." A general purpose computer which merely performs a mathematical algorithm (one type of abstract idea) on data, where the data is not representative of physical activity or objects, does not produce a "useful, concrete and tangible result."

Appellants argue that the present method goes much further than merely applying a mathematical algorithm (which first appears in independent claim 4) to calculate the first and second fixed rates, and the calculations are only part of the overall process (Br11). It is argued (Br11): "The 'practical application' of the mathematical algorithm in this case is the transactions that are set up using the fixed rates as price points, thereby creating a 'risk position' which minimizes the risk involved with the fluctuation of the price of a commodity for both the buyer and the seller of the commodity." It is further argued (Br11-12):

> The overall method also provides a result that is "useful, concrete and tangible." The provision of energy in a cost-efficient manner for all parties involved has value to society in general, and is therefore "useful." Based on the risk positions established by the method disclosed in the application, various parties, including end users, utility companies and resource suppliers are risking real money: therefore, the result is "tangible" and "concrete."

It is argued that the test for statutory subject matter is set forth in *AT&T*, and "[w]ith respect to process, and especially processes involving mathematical algorithms, the result was whether or not a 'useful, concrete and tangible result' ensued from the application of the process" (RBr3). It is further argued (RBr3):

> In this case, execution of the process results in the calculation of first and second fixed rates for the buying and selling of commodities, specifically, energy commodities. These fixed rates represent a "risk position." The rates are used by a commodity broker to establish buy/sell positions with both end users and suppliers of the commodity, with the risk for the established positions balancing each other. This is a "useful, concrete and tangible result" and, as a result, the Appellants submit that the process is statutory subject matter.

The present rejection does not rely on the presence of a mathematical algorithm. Claim 1 does not appear to directly or indirectly recite a mathematical algorithm. The Federal Circuit has said that the Freeman-Walter-Abele test is of little value, so there is no longer any need to investigate the presence of a mathematical algorithm. The holding in State Street is limited to the context of "transformation of data ... by a machine" and AT&T involved a machine-implemented process. Thus, it does not appear that the "useful, concrete and tangible result" test applies in the present situation. To the extent the "useful, concrete and tangible result" test is generally applicable, appellants' arguments indicate the difficulty in applying terms that have never been defined. We conclude that a "concrete and tangible result" requires a transformation of physical subject matter and/or evidence that the subject matter is more than an "abstract idea." None of the claims recites a transformation of physical subject matter and the claims recite an "abstract idea" rather than a practical implementation of that idea.

Appellants argue that the examiner errs in applying the Guidelines for Computer-Related Inventions, MPEP § 2106 (which is based on the guidelines at 61 Fed. Reg. 7478, 1184 O.G. 87, see footnote 6), "because the Appellants have made it clear that a computer is not part of the invention" (RBr2). It is argued that the examiner erred in applying the standards from the Computer Guidelines and then concluding that "because there is no computer claimed [sic], that no practical application exists, and, as a result, the invention is not statutory" (RBr2).

We agree with appellants that the Computer Guidelines do not apply to the instant non-machine-implemented process claims. We also agree that it was incorrect for the examiner to determine generally that there can be no practical application of a process without a computer and that subject matter cannot be within the "technological arts" without a computer. The presence of a computer makes it much easier to find statutory subject matter, but a method can be statutory subject matter without a machine.

It is argued that "although several steps of the claimed process can be aided through the use of a computer, a computer is not necessary to implement the process" (RBr2) and "[t]herefore it is unclear whether the claimed invention should be considered a computer-related invention or not" (RBr2-3). Appellants argue that "assuming, arguendo, that the claimed invention can be considered a computer-related invention, ... it is still statutory subject matter" (RBr3).

We agree with appellants that the claims are not directed to a computer-related invention, but obviously do not agree that the claims are directed to statutory subject matter.

Oral argument

At the oral argument, it was argued that the claims are presumptively directed to a "process" under § 101 because they recite a series of steps. It was argued that § 101 states that "any ... process" is patentable, the statute must be interpreted broadly, and that any change in up to Congress.

As we have made clear throughout this opinion, we disagree. It was stated in State Street:

> The plain and unambiguous meaning of § 101 is that any invention falling within one of the four stated categories of statutory subject matter may be patented, provided it meets the other requirements for patentability set forth in Title 35, i.e., those found in §§ 102, 103, and 112, ¶ 2.
>
> The repetitive use of the expansive term "any" in § 101 shows Congress's intent not to place any restrictions on the subject matter for which a patent may be obtained beyond those specifically recited in § 101. Indeed, the Supreme Court has acknowledged that Congress intended § 101 to extend to "anything under the sun that is made by man." Thus, it is improper to read limitations into § 101 on the subject matter that may be patented where the legislative history indicates that Congress clearly did not intend such limitations.
>
> ...
>
> The Supreme Court has identified three categories of subject matter that are unpatentable, namely "laws of nature, natural phenomena, and

> abstract ideas." [Footnotes and citations omitted.]

149 F.3d at 1372-73, 47 USPQ2d at 1600. This is not inconsistent with our position that not every series of steps is a "process" under § 101 because the Supreme Court's definition of a "process" requires a transformation of physical subject matter from one state to another. It would be helpful if the Federal Circuit would address this question directly. If every series of steps is presumptively a "process" under § 101, then it would be almost impossible to hold that such a claim is directed to nonstatutory subject matter because the "abstract idea" exclusion technically refers to subject matter that is not within § 101 (although case law suggests it can refer to subject matter that is within § 101 "but for" some special condition).

Appellants stated that the "rule of nature" and "natural phenomenon" exclusions do not apply, so the rejection must be based on the "abstract idea" exclusion. It was argued that Alappat, 33 F.3d at 1542 n.18, 31 USPQ2d at 1556 n.18, states that abstract ideas constitute disembodied concepts or truths that are not useful until reduced to some practical application. Applicants proposed that the test should be that any series of steps having a "real world effect" is a "process" under § 101, because a claim having a real world effect is not an abstract idea and is useful, and under such a test it would not be necessary to look at exceptions. It was argued that the transfer of commodities and the assumption of risk in the claims are real world effects.

It is not clear that adding another test would be useful: it is no easier to determine if there is a "real world effect" than it is to determine whether there is a "practical application." It is hard to define the line between a patentable "practical application" (or "real world effect") and an unpatentable "abstract idea." In this case, the fact that the claims are so broad that they cover ("preempt") any and every way to perform the steps indicates that what is being claimed is the "abstract idea" itself. That is, the claims read as if they are describing the concept without saying how any of the steps would be specifically implemented to produce a "real world effect." In our opinion, the transformation of physical subject matter test is a more objective way to perform the § 101 analysis for nonmachine- implemented method claims.

For the reasons stated above, we conclude that appellants' oral arguments are not persuasive.

CONCLUSION

The rejection of claims 1-11 under 35 U.S.C. § 101 is sustained.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136 (a) (1) (iv).

AFFIRMED

BOARD OF PATENT APPEALS AND INTERFERENCES

/s/ CHARLES E. FRANKFORT
Administrative Patent Judge

/s/ LEE E. BARRETT
Administrative Patent Judge

/s/ JENNIFER D. BAHR
Administrative Patent Judge

/s/ MARK NAGUMO
Administrative Patent Judge

CONCURRING OPINION

MCQUADE Administrative Patent Judge, concurring.

The quest for a bright line test for determining whether a claimed invention embodies statutory subject matter under 35 U.S.C. § 101 is an exercise in futility.

35 U.S.C. § 101 provides that "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." Congress intended this provision to encompass anything under the sun that is made by man. See Diamond v. Chakrabarty, 447 U.S. 303, 309 (1980). Nonetheless, § 101 has limits and does not embrace every discovery within its statutory terms. Excluded from patent protection are laws of nature, physical phenomena and abstract ideas. See id.; see also Diamond v. Diehr, 450 U.S. 175, 185 (1981); Parker v. Flook, 437 U.S. 584, 589 (1978); and Gottschalk v. Benson, 409 U.S. 63, 67 (1972).

The proper inquiry requires a claim to be considered as a whole. See Flook, 437 U.S. at 594; Diehr, 450 U.S. at 188; AT&T Corp. v. Excel Communications, Inc., 172 F.3d 1352, 1357, 50 USPQ2d 1447, 1451 (Fed. Cir. 1999); and In re Alappat, 33 F.3d 1526, 1543-44, 31 USPQ2d 1545, 1557 (Fed. Cir. 1994). The focus here should center on the essential characteristics of the claimed subject matter rather than on the particular statutory category to which the claim is nominally directed: process, machine, manufacture, or composition of matter. See State Street Bank & Trust Co. v. Signature Fin. Group, Inc., 149 F.3d 1368, 1375, 47 USPQ2d 1596, 1602

(Fed. Cir. 1998). In this regard, undue weight should not be given to the sort of claim limitations that exalt form over substance and would allow a competent draftsman to mask non-statutory subject matter. See Flook, 437 U.S. at 590.

Hence, any assessment to determine whether a claim recites statutory subject matter should be fact-specific and conducted on a case-by-case basis. This approach, of course, does not easily lend itself to a test. The pointlessness of nevertheless attempting to settle on a test is exemplified by the tortured rise and sudden fall of the so-called Freeman-Walter-Abele test.[1] See AT&T, 172 F.3d at 1359, 50 USPQ2d at 1453, quoting State Street, 149 F.3d at 1374, 47 USPQ2d at 1601 ("After Diehr and Chakrabarty, the Freeman-Walter-Abele test has little, if any, applicability to determining the presence of statutory subject matter"). Moreover, the Supreme Court has implicitly cautioned against reliance on tests in this area. See Benson, 409 U.S. at 71 ("We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.... It is said we freeze process patents to old technologies, leaving no room for the revelations of the new, onrushing technology. Such is not our purpose."). Per se rules or tests, while arguably easy to apply, simply do not afford the flexibility needed to keep pace with new developments in technology and the law.

As for the merits of the present case, the appellants have not separately argued the patentability of any claim apart from the others. Thus, claims 1-11 stand or fall together. See In re Young, 927 F.2d 588, 590, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991); and In re Wood, 582 F.2d 638, 642, 199 USPQ 137, 140 (CCPA 1978). Claim 1, reproduced in the majority opinion, is representative.

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[1] This test evolved from the holding in In re Freeman, 573 F.2d 1237, 197 USPQ 464 (CCPA 1978), as modified by In re Walter, 618 F.2d 758, 205 USPQ 397 (CCPA 1980), and further by In re Abele, 684 F.2d 902, 214 USPQ 682 (CCPA 1982).

Claim 1 recites a method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price. In other words, claim 1 pertains to a method of doing business.[2]

As pointed out in the majority opinion, the steps recited in claim 1

> do not recite any specific way of implementing the steps; do not expressly or impliedly recite any physical transformation of physical subject matter, tangible or intangible, from one state into another; do not recite any electrical, chemical, or mechanical acts or results; do not directly or indirectly recite transforming data by a mathematical or non-mathematical algorithm; are not required to be performed on a machine, such as a computer, either as claimed or disclosed; could be performed entirely by human beings; and do not involve making or using a machine, manufacture, or composition of matter [page 6, supra].

Considered collectively, these are powerfully persuasive factual indicators (not tests) that the method recited in claim 1 is, at its core, a disembodied business concept representing nothing more than a non-statutory abstract idea. That the "initiating" and "identifying" steps recited in the claim are drafted as acts required to be performed is of no moment. Given the full context of the claim, these acts are nominal in nature and merely serve to superficially couch the appellants' abstract idea in a method or process format.

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[2] This, in and of itself, does not render the subject matter recited in claim 1 non-statutory. The so-called "business method" exception to statutory subject matter was ill-conceived and has been put to rest. See State Street, 149 F.3d at 1375, 47 USPQ2d at 1602.

For these reasons, the examiner's determination that claim 1, and claims 2-11, which stand or fall therewith, are directed to non-statutory subject matter under 35 U.S.C. § 101 is well founded.

BOARD OF PATENT APPEALS AND INTERFERENCES

/s/ JOHN P. McQUADE
Administrative Patent Judge

OPPOSITION

BRIEF

Supreme Court, U.S.
FILED

MAY [illegible] - 2009

OFFICE OF THE CLERK

No. 08-964

In the Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
PETITIONERS

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF
COMMERCE FOR INTELLECTUAL PROPERTY AND
ACTING DIRECTOR OF THE UNITED STATES PATENT
AND TRADEMARK OFFICE

*ON PETITION FOR A WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT*

BRIEF FOR THE RESPONDENT IN OPPOSITION

ELENA KAGAN
Solicitor General
Counsel of Record

TONY WEST
Assistant Attorney General

SCOTT R. MCINTOSH
MARK R. FREEMAN
Attorneys

Department of Justice
Washington, D.C. 20530-0001
(202) 514-2217

RAYMOND T. CHEN
Solicitor

THOMAS W. KRAUSE
Associate Solicitor
United States Patent and Trademark Office
Alexandria, VA 22314

QUESTION PRESENTED

Whether the court of appeals correctly held, consistent with this Court's longstanding interpretation of 35 U.S.C. 101, that petitioners' claimed method of hedging consumption risk does not qualify as a patent-eligible process because that method neither (1) is tied to a particular machine or apparatus nor (2) transforms an article into a different state or thing.

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In the Supreme Court of the United States

No. 08-964

BERNARD L. BILSKI AND RAND A. WARSAW,
PETITIONERS

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF
COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING
DIRECTOR OF THE UNITED STATES PATENT AND
TRADEMARK OFFICE

ON PETITION FOR A WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

BRIEF FOR THE RESPONDENT IN OPPOSITION

OPINIONS BELOW

The opinion of the court of appeals (Pet. App. 1a-143a) is reported at 545 F.3d 943. The opinion of the Board of Patent Appeals and Interferences (Pet. App. 146a-205a) is unreported.

JURISDICTION

The judgment of the court of appeals was entered on October 30, 2008. The petition for a writ of certiorari was filed on January 28, 2009. The jurisdiction of this Court is invoked under 28 U.S.C. 1254(1).

STATEMENT

This case arises from a decision of the United States Patent and Trademark Office (PTO) rejecting all claims in petitioners' patent application for lack of patent-eligible subject matter under 35 U.S.C. 101. Pet. App. 2a. The court of appeals, sitting en banc, affirmed. *Id.* at 1a-143a.

1. The Patent Clause of the Constitution empowers Congress "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to * * * Inventors the exclusive Right to their * * * Discoveries." U.S. Const. Art. 1, § 8, Cl. 8. Congress exercised that authority in enacting the patent statute, which provides, in relevant part:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. 101.

Although the statute is broad in scope, see *Diamond* v. *Chakrabarty*, 447 U.S. 303, 308 (1980), it imposes several limitations on the subject matter eligible for federal patent protection. *Id.* at 309. For example, "no patent is available for a discovery, however useful, novel, and nonobvious, unless it falls within one of the express categories of patentable subject matter of 35 U.S.C. § 101." *Kewanee Oil Co.* v. *Bicron Corp.*, 416 U.S. 470, 483 (1974). By "bring[ing] certain types of invention and discovery within the scope of patentability while excluding others," the patent statute "seeks to avoid the dangers of overprotection just as surely as it seeks to avoid the diminished incentive to invent that underprotection can threaten." *Laboratory Corp. of Am. Holdings* v. *Metabolite Labs., Inc.*, 548 U.S. 124, 127 (2006) (*LabCorp*) (Breyer, J., dissenting from dismissal of writ of certiorari). In considering the scope of patent-eligible subject matter under Section 101, courts therefore "must proceed cautiously when * * * asked to extend patent rights into areas wholly unforeseen by Congress." *Parker* v. *Flook*, 437 U.S. 584, 596 (1978).

2. Petitioners seek to patent a method of hedging risks, such as weather-related risks, in the purchase and sale of commodities. Pet. App. 2a. Claim 1 of petitioners' application reads:

> A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:
>
> > (a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer;
> >
> > (b) identifying market participants for said commodity having a counter-risk position to said consumers; and
> >
> > (c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions[.]

Id. at 2a-3a. All 11 claims in the application disclose variations on that hedging method. *Id.* at 3a.

3. The PTO examiner rejected the application for lack of patent-eligible subject matter under 35 U.S.C. 101. Pet. App. 4a. An expanded five-judge panel of the PTO's Board of Patent Appeals and Interferences (Board) affirmed the examiner's decision. *Id.* at 146a-205a. The Board emphasized that petitioners' claims "do not recite any specific way of implementing the steps; do not expressly or impliedly recite any physical transformation of physical subject matter, tangible or intangible, from one state into another; do not recite any electrical, chemical, or mechanical acts or results; * * * and do not involve making or using a machine, manufacture, or composition of matter." *Id.* at 150a. Rather, the claimed method involves only the manipulation of "nonphysical financial risks and legal liabilities of the commodity provider, the consumer, and the market participants having a counter-risk position to the consumer." *Id.* at 182a. The Board concluded that a claim limited to such nonphysical transformations is not patentable under Section 101. *Ibid.* The Board further found that petitioners' claims are so broad as to preempt "any and every possible way of performing the steps of the plan" for managing consumption risk. *Id.* at 184a.

4. a. After briefing and argument before a three-judge panel, but before the panel had issued a decision, the court of appeals sua sponte ordered the appeal heard en banc. Pet. App. 144a-145a. The en banc court directed the parties to file supplemental briefs addressing five questions, including "[w]hat standard should govern in determining whether a process is patent-eligible subject matter under [S]ection 101"; "[w]hether a method or process must result in a physical transformation of an article or be tied to a machine to be patent-eligible subject matter under [S]ection 101"; and whether it was

appropriate for the court to reconsider or overrule its decisions in *State Street Bank & Trust Co.* v. *Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), cert. denied, 525 U.S. 1093 (1999), and *AT&T Corp.* v. *Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir.), cert. denied, 528 U.S. 946 (1999), the cases that some patent applicants have invoked in arguing that any series of steps having a "useful, concrete, and tangible result" qualifies as a patent-eligible process. Pet. App. 144a-145a.

b. The en banc court of appeals affirmed. Pet. App. 1a-143a. After reviewing this Court's precedents discussing the patent eligibility of processes, *id.* at 7a-12a, the court concluded that a claimed process qualifies for patent protection if "(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing." *Id.* at 12a-13a (citing *Diamond* v. *Diehr*, 450 U.S. 175, 192 (1981); *Flook*, 437 U.S. at 588 n.9; *Gottschalk* v. *Benson*, 409 U.S. 63, 70 (1972); *Cochrane* v. *Deener*, 94 U.S. 780, 788 (1877)). The court observed that this Court had applied the "machine-or-transformation test" in *Diehr*, and that such an approach is consistent with this Court's earlier decisions. Pet. App. 14a & n.8; see *id.* at 15a-16a (explaining that "[t]ransformation and reduction of an article 'to a different state or thing' is *the* clue to the patentability of a process claim that does not include particular machines") (quoting *Benson*, 409 U.S. at 70) (emphasis added by court of appeals); *id.* at 16a-17a (same) (quoting *Diehr*, 450 U.S. at 184). The court recognized that "future developments in technology and the sciences may present difficult challenges" in applying that test, and it acknowledged the possibility that the Federal Circuit or this Court "may in the future refine or augment the test or how it is applied." *Id.* at 17a. The court concluded, however, that for now, "and certainly for the present case," there was no need to depart from the machine-or-transformation test. *Id.* at 17a & n.12.

The court of appeals also identified two "corollar[ies]" governing application of the machine-or-transformation test, each drawn from this Court's cases. First, "mere field-of-use limitations are generally insufficient to render an otherwise ineligible process claim patent-eligible." Pet. App. 18a (citing *Diehr*, 450 U.S. at 191-192 (explaining that restrictions on patenting abstract ideas and mathematical formulas "cannot be circumvented by attempting to limit the use of the formula to a particular technological environment")). Second, "insignificant post[-]solution activity will not transform an unpatentable principle into a patentable process." *Id.* at 19a (quoting *Diehr*, 450 U.S. at 191-192); *ibid.* (quoting *Flook*, 437 U.S. at 590 ("The notion that post-solution activity, no matter how conventional or obvious in itself, can transform an unpatentable principle into a patentable process exalts form over substance.")).

The court of appeals disavowed statements in its own prior decisions that were potentially inconsistent with the machine-or-transformation test. Pet. App. 21a-27a. In particular, the court revisited the oft-quoted language in *State Street Bank* and related cases suggesting that any process that yields a "useful, concrete, and tangible result" is eligible for patent protection. *State Street Bank*, 149 F.3d at 1373 (citation omitted); see Pet. App. 22a-23a (collecting cases). The court explained (*id.* at 23a-24a) that, although that formulation "may in many instances provide useful indications of whether a claim is drawn to a fundamental principle" (by which the court meant "laws of nature, natural phenomena, and abstract ideas," *id.* at 8a n.5), that formulation is not by itself sufficient to distinguish patentable from unpatentable processes. The court further noted that the "useful, concrete and tangible result" standard "was certainly never intended to supplant the Supreme Court's test." *Id.* at 24a.

Turning to petitioners' claimed method of hedging risk in the sale of commodities, the court concluded that petitioners' application "entirely fails the machine-or-transformation test." Pet. App. 32a. The court explained that the claimed process involves no transformations of articles into different states or things, but at most involves only modifications "of public or private legal obligations or relationships, business risks, or other such abstractions." *Ibid.* Moreover, the court observed, it is uncontested that petitioners' claims do not require the use of any particular machine or apparatus. *Ibid.* Indeed, "claim 1 would effectively pre-empt any application of the fundamental concept of hedging and [the] mathematical calculations inherent in hedging." *Id.* at 36a. Accordingly, the court concluded, petitioners' "claim is not drawn to patent-eligible subject matter under [Section] 101." *Id.* at 37a.

c. Judge Dyk, joined by Judge Linn, filed a concurring opinion that reviewed the history of Section 101. Pet. App. 38a-59a. The concurring judges concluded that "the unpatentability of processes not involving manufactures, machines, or compositions of matter has been firmly embedded in the statute since the time of the Patent Act of 1793." *Id.* at 38a. In particular, they stressed that "[t]here is no suggestion in any of this early [history] of process patents that processes for organizing human activity were or ever had been patentable." *Id.* at 50a.

d. Judges Newman (Pet. App. 60a-105a), Mayer (*id.* at 106a-133a), and Rader (*id.* at 134a-143a) filed separate dissenting opinions. Only Judge Newman would have held petitioners' claims to be patent-eligible under Section 101. See *id.* at 104a. Judge Mayer would have held that process claims "directed to a method of conducting business," including petitioners' claims, are categorically ineligible for patent protection. *Id.* at 106a. Judge Rader would have rejected petitioners' application solely on the ground that it seeks to patent an abstract idea. *Id.* at 134a; see *id.* at 139a.

ARGUMENT

The court of appeals held that petitioners' method of hedging risk in the purchase and sale of commodities is not a "process" eligible for patent protection under 35 U.S.C. 101. That decision is correct and does not conflict with any decision of this Court or any other court of appeals. The court's decision conforms circuit precedent with this Court's decisions interpreting Section 101; repudiates earlier Federal Circuit formulations of the standard for patentable processes (such as the "useful, concrete, and tangible result" test) that had engendered confusion in the law; and properly leaves questions not presented by petitioners' application, such as the circumstances under which computer software may be patented, for resolution in future cases. Further review is not warranted.

1. a. Petitioners' method for hedging risk in the purchase and sale of commodities—a technique for organizing human activity only—is not a "process" eligible for patent protection under 35 U.S.C. 101. The PTO exam-

iner and five expert administrative judges on the Board unanimously concluded that petitioners' application is not directed to patent-eligible subject matter. Pet. App. 4a, 146a. And while petitioners characterize the decision below as "fractured," Pet. 13, only one member of the en banc court would have held that petitioners' claimed method was patentable.[1]

In affirming the Board's decision, the court of appeals held that a claimed process will qualify for patent protection if "(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing." Pet. App. 12a. That test is drawn directly from this Court's most recent decisions interpreting Section 101, which explain that "[t]ransformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines." *Diamond* v. *Diehr*, 450 U.S. 175, 184 (1981) (quoting *Gottschalk* v. *Benson*, 409 U.S. 63, 70 (1972)); see generally *id.* at 181-184 (using standard tools of statutory construction—including consideration of ordinary meaning, legislative history, and case law—to arrive at machine-or-transformation test). The machine-or-transformation test is also consistent with this Court's earlier cases interpreting the same provision. See Pet. App. 14a (citing *Tilghman* v. *Proctor*, 102 U.S. 707, 729 (1880) (process for transforming fats into constituent compounds held patentable); *Cochrane* v. *Deener*, 94 U.S. 780, 784-788 (1877) (process for transforming grain meal into purified flour held patentable); *O'Reilly* v. *Morse*, 56 U.S. (15 How.) 62, 113 (1854) (holding unpatentable a process claim purporting to cover any use of electromagnetism to print letters at a distance, untied to any particular apparatus)).

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[1] Nine of the 12 judges on the en banc court joined the majority opinion. Pet. App. 1a. Of the three dissenting judges, only one would have held that petitioners' hedging method qualifies as a "process" eligible for patent protection. *Id.* at 60a-105a (Newman, J., dissenting); see p. 8, *supra*.

The decision below represents an unremarkable application of that machine-or-transformation test. As the Board explained, petitioners' claims

> do not recite any specific way of implementing the steps; do not expressly or impliedly recite any physical transformation of physical subject matter, tangible or intangible, from one state into another; do not recite any electrical, chemical, or mechanical acts or results; do not directly or indirectly recite transforming data by a mathematical or non-mathematical algorithm; are not required to be performed on a machine, such as a computer, either as claimed or disclosed; could be performed entirely by human beings; and do not involve making or using a machine, manufacture, or composition of matter.

Pet. App. 150a. Rather, as the court of appeals concluded, petitioners seek to patent "[p]urported transformations or manipulations simply of public or private legal obligations or relationships, business risks, or other such abstractions," without any connection to a particular device or article and without "the transformation of any physical object or substance" into another state or thing. *Id.* at 32a.

This Court has never suggested that a method of this kind, relating to purely human activity, may properly be the subject of a patent. To the contrary, the Court has repeatedly made clear that the term "process" in Section 101 carries a significantly narrower and more technical meaning. See *Diehr*, 450 U.S. at 184; *Parker* v. *Flook*, 437 U.S. 584, 588-589 (1978); *Cochrane*, 94 U.S. at 788 ("A process is * * * an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing."). As the court of appeals recognized, the abstract nature of petitioners' claims places them outside the bounds of a patent-eligible process. See Pet. App. 29a (explaining that the court saw "no reason here to expand the boundaries of what constitutes patent-eligible transformations of articles" to include "manipulation of * * * abstract constructs such as legal obligations, organizational relationships, and business risks"); see also *id.* at 184a (Board opinion) ("Because the steps cover ('preempt') any and every possible way of performing the steps of the plan, by human or by any kind of machine or by any combination thereof, we conclude that the claim is so broad that it is directed to the 'abstract idea' itself."). This Court has consistently held that abstract claims of that kind are not patentable under Section 101. See, *e.g.*, *Diehr*, 450 U.S. at 185-187; *Benson*, 409 U.S. at 71-72; *Morse*, 56 U.S. (15 How.) at 113.

b. In contending (Pet. 17) that the court of appeals has adopted a "rigid" test that conflicts with this Court's decisions, petitioners emphasize that the Court in *Benson* and *Flook* declined to embrace the machine-or-transformation test out of a concern for accommodating unforeseen technologies. See *Benson*, 409 U.S. at 71 ("We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents."); *Flook*, 437 U.S. at 588 n.9 ("As in *Benson*, we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents."). But as the court of appeals observed

(Pet. App. 16a-17a), this Court did not repeat that caveat in *Diehr* when it stated (quoting earlier decisions) that "[t]ransformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines." 450 U.S. at 184 (quoting *Benson*, 409 U.S. at 70 (quoting *Cochrane*, 94 U.S. at 788)). In any event, the court of appeals specifically acknowledged the Court's earlier hesitation in *Benson* and *Flook*, see Pet. App. 16a-17a, and made clear that the door remains open for future refinements of the machine-or-transformation test, as necessary, to accommodate new technologies:

> [W]e agree that future developments in technology and the sciences may present difficult challenges to the machine-or-transformation test, just as the widespread use of computers and the advent of the Internet has begun to challenge it in the past decade. * * * And we certainly do not rule out the possibility that this court may in the future refine or augment the test or how it is applied. At present, however, and certainly for the present case, we see no need for such a departure.

Id. at 17a. Such an accretionary approach is entirely consistent with this Court's decisions. It is also prudent, for it accommodates the possibility of unforeseen technological innovations, while at the same time providing a reasonably clear rule for the PTO to apply in examining process claims (such as petitioners') that are addressed solely to the organization of human activity.

c. Petitioners contend that the court of appeals' ruling is inconsistent with Congress's purported intent to authorize the issuance of patents for "anything under the sun that is made by man." Pet. 16 (quoting *Dia-*

mond v. *Chakrabarty*, 447 U.S. 303, 309 (1980) (quoting S. Rep. No. 1979, 82d Cong. 2d Sess. 5 (1952); and H.R. Rep. No. 1923, 82d Cong., 2d Sess. 6 (1952))). But as some of the opinions below observed (Pet. App. 58a (Dyk, J., concurring); *id.* at 110a-111a (Mayer, J., dissenting); *id.* at 156a-157a & n.5 (Board)), the cited legislative history, when read in context, supports only a more modest proposition:

> A person may have 'invented' a machine or a manufacture, which may include anything under the sun that is made by man, but it is not necessarily patentable under section 101 unless the conditions of the title are fulfilled.

S. Rep. No. 1979, *supra*, at 5; H.R. Rep. No. 1923, *supra*, at 6. As the context makes clear, the "anything under the sun" language was not addressed to process claims at all, but rather to machines and "manufactures," which this Court had previously construed to encompass "anything made for use from raw or prepared materials." *American Fruit Growers, Inc.* v. *Brogdex Co.*, 283 U.S. 1, 11 (1931) (defining "manufacture") (citation omitted). Consistent with that understanding, this Court specifically considered the Senate and House Reports' reference to "anything under the sun" before concluding that a patent-eligible process is defined by the machine-or-transformation test. *Diehr*, 450 U.S. at 182. At a minimum, as the Board recognized, the legislative history lends no support to petitioners' notion that "'anything under the sun made by man' was intended to include every series of acts conceived by man." Pet. App. 157a; see *id.* at 58a (Dyk, J., concurring) ("It refers to things 'made by man,' not to methods of organizing human activity.").

d. There is likewise no merit to petitioners' contention that the machine-or-transformation test "threatens to stifle innovation in emerging technologies." Pet. 25; see Pet. 25-32. As already discussed, the test flows directly from this Court's decisions, including its recent ones. Moreover, the court of appeals expressly left room to accommodate emerging technologies. Pet. App. 17a.

In any event, the court of appeals emphasized that its decision in this case does not address the application of the machine-or-transformation test to computer software, data-manipulation techniques, or other such technologies not involved in petitioners' risk-hedging claim. See, *e.g.*, Pet. App. 25a n.23 ("[T]he process claim at issue in this appeal is not, in any event, a software claim. Thus, the facts here would be largely unhelpful in illuminating the distinctions between those software claims that are patent-eligible and those that are not."); *id.* at 28a ("We leave to future cases the elaboration of the precise contours of machine implementation, as well as the answers to particular questions, such as whether or when recitation of a computer suffices to tie a process claim to a particular machine."); *id.* at 29a (indicating that the court will take "a measured approach" in applying the machine-or-transformation test to electronically manipulated data).

Thus, even if petitioners' policy arguments had merit, they are essentially irrelevant to the proper disposition of this case because petitioners' patent application involves none of the frontier technologies on which the petition dwells. Indeed, the abstract market-hedging scheme that petitioners seek to patent is ineligible under any conventional understanding of Section 101. This case accordingly provides no opportunity for the Court to address the problems that may arise in applying Section 101 to technologies unforeseen by Congress in the 1952 Patent Act, such as "photonic[s]" (Pet. App. 60a (Newman, J., dissenting)) or "subatomic particles" (*id.* at 134a (Rader, J., dissenting)).[2]

e. Petitioners contend that the PTO "has acknowledged that this is a good case for review." Pet. 33. The agency supported en banc review in the court of appeals so that the court could clarify its circuit precedent in light of this Court's jurisprudence. Resp. Supp. C.A. Br. 3. The court of appeals did so. In particular, the court revisited the suggestion in *State Street Bank & Trust Co.* v. *Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), cert. denied, 525 U.S. 1093 (1999), *AT&T Corp.* v. *Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir.), cert. denied, 528 U.S. 946 (1999), and related cases that any process yielding a "useful, concrete, and tangible result" is eligible for patent protection. *E.g.*, *State Street*, 149 F.3d at 1373 (citation omitted); see Pet. App. 22a-23a. Sitting en banc, the court of appeals explained that the "useful, concrete, and tangible result" formulation is not alone sufficient to distinguish patentable from unpatentable processes, and that the standard "was certainly never intended to supplant the Supreme Court's test." *Id.* at 24a.

Contrary to petitioners' suggestion (*e.g.*, Pet. 18-19), the court of appeals' decision does not disrupt any well-founded expectations. Neither this Court nor the Federal Circuit has ever held that claims (like petitioners') that describe nothing more than a series of steps performed by humans are eligible for patent protection. For example, as the court of appeals observed (Pet. App. 23a n.18), the claim at issue in *State Street* was drawn to a "machine," 149 F.3d at 1372, and the claim in *AT&T* described a machine-based process, 172 F.3d at 1357-1358. A "useful, concrete, and tangible result" test for patent-eligibility has no grounding in this Court's precedents "and, if taken literally, * * * would cover instances where this Court has held the contrary." *Laboratory Corp. of Am. Holdings* v. *Metabolite Labs., Inc.*, 548 U.S. 124, 136 (2006) (Breyer, J., dissenting from dismissal of writ of certiorari).

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[2] This case—which involves a non-machine implemented, non-transformative method—is likewise not an appropriate vehicle to review any potential application of the machine-or-transformation test to computer-software or non-method claims. See Pet. 32 (citing Board cases purportedly applying the machine-or-transformation test in those contexts).

2. Petitioners contend (Pet. 23) that the decision below is inconsistent with 35 U.S.C. 273, which in certain circumstances provides preexisting users of patented business methods an affirmative defense against infringement claims. See 35 U.S.C. 273(b); see also 35 U.S.C. 273(a)(3) ("For purposes of this section * * * the term 'method' means a method of doing or conducting business."). This case does not provide a suitable vehicle for addressing the meaning and scope of Section 273. Neither the majority opinion below nor the principal dissent discussed that provision.[3] Nor was the issue a focus of the briefing below. That is likely because there has been no assertion of infringement in this case, and hence no opportunity to examine the scope of the affirmative defense provided in Section 273. Thus, even if questions concerning the meaning and scope of that provision otherwise warranted this Court's review, no such issue is squarely presented here.

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[3] Section 273 was cited only once in the opinions below, in a footnote in the dissenting opinion of Judge Mayer. Pet. App. 118a n.8.

In any event, nothing in the decision below is inconsistent with Section 273. Petitioners contend that Section 273's legislative history demonstrates that "Congress embraced both business methods and the Federal Circuit's *State Street Bank* 'useful, concrete, and tangible result' test." Pet. 23 (citing 145 Cong. Rec. S14,717 (daily ed. Nov 17, 1999)). But the text of Section 273 does not address the criteria for patent-eligibility, much less adopt a "useful, concrete, and tangible result" test. See 35 U.S.C. 273. Moreover, even if Section 273 reflected a congressional acknowledgment that business methods are patentable (rather than merely providing a special defense for parties accused of infringing such patents), the court below did not hold that business methods are categorically ineligible for patent protection. Indeed, the majority expressly rejected calls to endorse that view. Compare Pet. App. 25a, with *id.* at 106a-133a (Mayer, J., dissenting) (arguing that business methods are categorically unpatentable). The court merely recognized that patent applications directed to business methods are "subject to the same legal requirements for patentability as applied to any other process or method." *Id.* at 25a (quoting *State Street Bank*, 149 F.3d at 1375).[4] That conclusion is correct and consistent with Section 273.

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[4] Contrary to petitioners' suggestion (Pet. 21-24), the decision below does not limit patentable processes to "manufacturing methods." Pet. 21. Process claims that describe the operation of a machine (including programmed computers) would not necessarily be ineligible under the machine-or-transformation test. And, nothing in the decision below threatens the eligibility of biotechnological or chemical inventions for patent protection, as long as they involve a transformation.

CONCLUSION

The petition for a writ of certiorari should be denied.

Respectfully submitted.

ELENA KAGAN
Solicitor General

TONY WEST
Assistant Attorney General

SCOTT R. MCINTOSH
MARK R. FREEMAN
Attorneys

RAYMOND T. CHEN
Solicitor

THOMAS W. KRAUSE
Associate Solicitor
United States Patent and Trademark Office

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REPLY
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Respondent.

On Petition for Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

PETITIONERS' REPLY BRIEF

J. MICHAEL JAKES
Counsel of Record
ERIKA H. ARNER
FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.
901 New York Avenue, N.W.
Washington, D.C. 20001
(202) 408-4000

RONALD E. MYRICK
DENISE W. DEFRANCO
FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.
55 Cambridge Parkway
Cambridge, Massachusetts 02142
(617) 452-1600

WILSON-EPES PRINTING CO., INC. – (202) 789-0096 – WASHINGTON, D.C. 20002

AMENDMENT TO RULE 29.6 CORPORATE DISCLOSURE STATEMENT

Equitable Resources, Inc. has changed its name to EQT Corporation. The Rule 29.6 Corporate Disclosure Statement that appeared in the petition for a writ of certiorari should therefore be amended to read:

All parent corporations and publicly held companies that own 10% or more of the stock of EQT IP Ventures, LLC are: EQT Corporation.

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IN THE
Supreme Court of the United States

No. 08-964

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,
v.
JOHN J. DOLL, ACTING UNDER SECRETARY OF
COMMERCE FOR INTELLECTUAL PROPERTY AND
ACTING DIRECTOR OF THE UNITED STATES PATENT
AND TRADEMARK OFFICE,
Respondent.

On Petition for Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

PETITIONERS' REPLY BRIEF

The Federal Circuit's "machine-or-transformation" test, which this Court has never said is required for patent eligibility, has abruptly changed the law of what can be patented under 35 U.S.C. § 101. By holding that this test is "the only applicable test" for patent-eligible processes, the decision below diminishes incentives for future innovation and destroys the settled expectations of countless patent owners. The machine-or-transformation test is consistent with neither Congressional intent that patentable subject matter "include anything under the sun that is made by man" nor this Court's precedent holding that only "laws of nature, natural phenomena, and abstract ideas" are excluded from protection under section 101. *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980); *Diamond v. Diehr*, 450 U.S. 175, 185 (1981). Restricting process or "method" patents to manufacturing methods that satisfy the "machine-or-transformation" test has effectively eliminated patent protection for business methods, contradicting the patent statute's recognition that business methods can be patented. *See* 35 U.S.C. § 273(a)(3).

Ten *amici*, including companies whose products range from electronics to regenerative medicine products, from computer software to mail delivery systems and management consulting services, and who collectively own thousands of patents, have all urged this Court to grant certiorari in this case, because "a mandatory machine-or-transformation test inherently denies valuable process patent protection to service industries and manufacturers whose products are not traditional physical articles." *See* Philips Electronics Br. 17.

Respondent argues that (i) this case—despite meriting en banc review below—is "unremarkable"; (ii) the recognition of "business method" patents in the Patent Act is not relevant to the questions presented; (iii) this case provides no opportunity for this Court to address problems arising in technologies outside of Petitioners' risk-hedging method; (iv) the "machine-or-transformation" test is drawn directly from this Court's precedent; and (v) no well-founded expectations were disrupted by the decision below. None of these points has merit.

I.

While Respondent characterizes this case as "an unremarkable application of [the] machine-or-transformation test," Opp. at 10, the procedural history and facts say otherwise. The U.S. Patent and Trademark Office ("Patent Office") singled this case out, empanelling an expanded five-judge panel and designating its 70-page opinion "informative" after nearly ten years of examination. Pet. 9. The Federal Circuit likewise elevated this case by *sua sponte* ordering its en banc consideration and using this case to overrule its earlier decisions applying the "useful, concrete and tangible result" test of *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998) and the *Freeman-Walter-Abele* test developed by the Federal Circuit to implement this Court's decision in *Gottschalk v. Benson*, 409 U.S. 63 (1972). Pet. App. 21a-24a. The thirty-eight *amicus* briefs filed in the Federal Circuit and the ten *amici* supporting the petition for certiorari further underscore the importance of the issues squarely presented in this case.[1]

The many amici[2] supporting Petitioner call this case the "proper vehicle" for deciding the "important issues of federal law" presented, giving this Court the opportunity to "inject certainty back into the patent system." Accenture & Pitney Bowes Br. 21; AIPLA

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[1] Many scholars have remarked on the extraordinary nature of this case. *See, e.g.*, Steven B. Roosa, *The Next Generation of Artificial Intelligence in Light of In re Bilski*, 21 INTELL. PROP. & TECH. L.J. 6, 6 (2009) (noting that while *Bilski* started as a dispute over whether a hedging method was patentable, the case "ended up being a wholesale reevaluation of the criteria that must be met . . . for a process to qualify as patentable under 35 U.S.C. § 101").

[2] The petition for certiorari has generated a level of *amicus* support not seen in a patent case since the landmark case of *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722 (2002).

Br. 2; Philips Electronics Br. 13. Because the machine-or-transformation test is "causing immediate and irreparable harm . . . the inventing community cannot afford to wait for some other, distant section 101 case to correct the Federal Circuit's error." Accenture & Pitney Bowes Br. 7.

Respondent argues that review is not warranted because only one judge below would have held Petitioners' claims patentable under section 101. Opp. 8. This argument misses the point. It is not merely the application of the machine-or-transformation test to petitioners' claims, but the Federal Circuit's adoption of this mandatory test for all process patents that warrants Supreme Court review. On this issue, the court below splintered. Three separate dissents warned that the machine-or-transformation test: "disrupts settled and wise principles of law," Pet. App. 134a (Rader, J., dissenting); is "unnecessarily complex and will only lead to further uncertainty regarding the scope of patentable subject matter," Pet. App. 131a (Mayer, J., dissenting); and introduces uncertainties that "not only diminish the incentives available to new enterprise, but disrupt the settled expectations of those who relied on the law as it existed," Pet. App. 61a (Newman, J., dissenting).

II.

Respondent urges this Court to proceed with caution, implying that Petitioners seek to "extend patent rights into areas wholly unforeseen by Congress." Opp. 3. In fact, the opposite is true. Congress expressly defined "business methods" in its 1999 revision of the Patent Act. 35 U.S.C. § 273(a)(3) ("[T]he term 'method' means a method of doing or conducting business."). Notably, when enacting section 273, Congress recognized that patents protect business methods "whether in the form of physical products, or in the form of services, or in the form of some other useful results; for example, results produced through the manipulation of data or other inputs to produce a useful result." 145 Cong. Rec. S14696-03, S14717 (daily ed. Nov. 17, 1999). Thus, Respondent's suggestion that overturning the machine-or-transformation test would improperly expand patent rights beyond Congress's intended scope is simply wrong.

Similarly, Respondent cannot simply sidestep the issue by arguing that the decision below does not involve section 273. *See* Opp. 16. In fact the Federal Circuit's decision overturned the very test embraced by Congress when it enacted section 273. Regarding the prior inventor defense to infringement of business method patents, Congress explained: "As the Court [in *State Street Bank*] noted, the reference to the business method exception had been improperly applied to a wide variety of processes, blurring the essential question of whether the invention produced a 'useful, concrete, and tangible result.'" 145 Cong. Rec. S14696-03, S14717 (daily ed. Nov. 17, 1999). The decision below wholly ignores Congress's acknowledgement and acceptance of the "useful, concrete, and tangible result" test and instead overrules the decisions that adopted it. Pet. App. 22a-24a.

More fundamentally, the machine-or-transformation test adopted by the Federal Circuit forecloses patent protection for a broad class of business methods included within the definition established by Congress in its section 273 effort to balance the rights of owners of patents on such methods against prior users of such methods. Rather than processes tethered to machines or physical transformations, Congress defined business methods in broad enough terms to encompass Petitioners' hedging method. Congress did not require physical restraints to machines or transformation of articles but merely "the manipulation of data or other inputs to produce a useful result." 145 Cong. Rec. S14696-03, S14717 (daily ed. Nov. 17, 1999). Under the mandatory application of a machine-or-transformation test, section 273 would provide a meaningless defense to the infringement of a class of patents that cannot exist. That cannot be what Congress intended, and the Federal Circuit's failure to address this conflict between its decision and the clear legislative intent expressed through the adoption of section 273 warrants review by this Court.

III.

A. Respondent argues that business methods remain patentable under the Federal Circuit's machine-or-transformation test, so the decision below does not conflict with section 273. Opp. 17. This argument does not square with how the machine-or-transformation test is being applied by the Federal Circuit, district courts, and the Patent Office. While this petition has been pending, for example, the Federal Circuit has applied the machine-or-transformation test to affirm Patent Office rejections of pending claims to a method of marketing software products. *In re Ferguson*, 558 F.3d 1359 (Fed. Cir. 2009). District courts have applied the machine-or-transformation test to invalidate claims to a method of detecting fraud in credit card transactions, *CyberSource Corp. v. Retail Decisions, Inc.*, 2009 WL 815448 (N.D. Cal. Mar. 27, 2009), and a method of creating a real estate investment instrument, *Fort Props., Inc. v. American Master Lease, LLC*, ___

F. Supp. 2d ___, 2009 WL 249205 (C.D. Cal. Jan. 22, 2009).

Judge Marilyn Patel of the U.S. District Court for the Northern District of California, noted that, "[a]lthough the majority declined [to] say so explicitly, *Bilski*'s holding suggests a perilous future for most business method patents." *CyberSource*, 2009 WL 815448, at *9. Indeed, she continued, "[t]he closing bell may be ringing for business method patents, and their patentees may find they have become bagholders." *Id.* at *10. Without this Court's intervention, the owners of thousands[3] of business method patents and patent applications filed before the introduction of the mandatory machine-or-transformation test will be left with valueless patent rights, which Judge Patel likens to "shareholder[s] left holding shares of worthless stocks." *Id.* at *10, n.16.

B. Respondent claims that innovations in emerging technologies are not relevant to this case because Petitioners' hedging method does not involve those technologies. Opp. 14. This argument, too, misses the point. The machine-or-transformation test in the decision below must be applied to every process claim, whether for business methods, software, biotechnology, or any other field of endeavor. The sweeping and mandatory nature of the test itself warrants this Court's review.

Software and computer-related inventions have already fallen victim to the machine-or-transformation test. In addition to the *CyberSource* decision applying the test to invalidate claims to a "computer readable medium containing program instructions for detecting fraud in a credit card transaction between a consumer and a merchant over the Internet," *CyberSource*, 2009 WL 815448, at *1, *7, the Board of Patent Appeals and Interferences has applied ***Bilski*** to reject computer-based claims, such as a "computerized method performed by a data processor," *Ex parte Gutta*, 2009 WL 112393 (B.P.A.I. Jan. 15, 2009); a "computerized method," *Ex parte Nawathe*, 2009 WL 327520 (B.P.A.I. Feb. 9, 2009); and a "computer readable media including program instructions." *Ex parte Cornea-Hasegan*, 89 U.S.P.Q.2d 1557 (B.P.A.I. 2009).

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[3] One *amicus* estimates that, in the business methods area alone, 18,000 issued patents and at least 48,000 pending patent applications are affected by the machine-or-transformation test. Boston Patent Law Assoc. Br. 24 n.11

Although Respondent attempts to dismiss *In re Bilski* as inapplicable to the software and information technology industries, the machine-or-transformation test has had such a "substantial impact upon these industries," that several *amici* from the computer industry now urge this Court to grant certiorari and overturn the machine-or-transformation test. *See, e.g.*, Borland Br. 15; Philips Electronics Br. 19. Scholarly observers agree that the decision below applies broadly to software and other computer-related innovations.[4]

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[4] *See, e.g.*, Robert R. Sachs & Robert A. Hulse, *On Shaky Ground: The (Near) Future of Patents After Bilski*, 11 No. 2 E-COMMERCE L. REP. 8, *3 (2009) (noting that the first casualties of *In re Bilski* will likely involve "software patents, particularly those issued after *Alappat* and *State Street*, [that] were written without paying homage to the court's talismanic 'machine-or-transformation' test"); Hannibal Travis, Essay, *The Future According to Google: Technology Policy From the Standpoint of America's Fastest-Growing Technology Company*, 11 YALE J.L. & TECH. 209, 221-22 (2009) (predicting that *Bilski* may have "pro-

Since the petition for certiorari first noted the impact of *In re Bilski* on biotechnology patents, Pet. 31, things have grown more urgent. At a Brookings Institution conference on the implications of *In re Bilski*, New York University law professor Rochelle Dreyfuss was asked whether *Bilski* killed medical diagnostic patents. Yes, she answered, noting that the Federal Circuit's application of *In re Bilski* to invalidate diagnostic method claims in *Classen Immunotherapies, Inc. v. Biogen IDEC*, 304 F. App'x 866 (Fed. Cir. 2009) was "so obviously the outcome of *Bilski*" that the four-line opinion was not marked for publication. Comments of Prof. Rochelle Dreyfuss, Proceedings of The Limits of Abstract Patents in an Intangible Economy, The Brookings Institution, January 14, 2009. *Amici* warn of groundbreaking innovations in the areas of diagnostic and treatment methods, immunology, and personalized medicine that will likely fall victim to the machine-or-transformation test,[5] joined by scholars who argue that the decision below poses a significant threat to innovation in biomedical technology and pharmaceuticals.[6]

Just as this case presented the opportunity for the Federal Circuit to issue a mandatory test for all process claims, regardless of technology, it also presents this Court with the opportunity to reverse

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found implications" for Google's patents and its search engine and other services).

[5] *See, e.g.*, Boston Patent Law Assoc. Br. 18; Medistem Br. 11.

[6] *See, e.g.*, William J. Simmons, *Bilski blundering biotech*, 27 NATURE BIOTECHNOLOGY 245, 247 (Mar. 2009) (noting that "[t]he potentially devastating extension of *Bilski* from business methods to biotech" is already playing out in patent infringement cases).

the damage that test has already begun to cause for all process patents, regardless of technology.[7]

IV.

A. The machine-or-transformation test is hardly drawn "directly" from this Court's precedent, as Respondent contends. Opp. 9. Rather than declaring that the "machine-or-transformation" test is the only test for process patent eligibility, this Court has twice refused to adopt such a rule. *Benson*, 409 U.S. at 71; *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978). Both Respondent and the Federal Circuit seek to dismiss these forbearances as mere "hesitation" or "equivocation" about the machine-or-transformation test. Opp. 12; Pet. App. 16a-17a. As noted by Judge Newman, however, "there is nothing equivocal about 'We do not so hold.'" Pet. App. 65a (Newman, J., dissenting) (quoting *Benson*, 409 U.S. at 71). When it adopted the machine-or-transformation test as the "only test" for whether a process is patent-eligible under 35 U.S.C. § 101, Pet. App. 34a, the Federal Circuit flouted this Court's precedent.

Respondent argues that Petitioners overstate this Court's interpretation of section 101 as extending patentable subject matter to include "anything under the sun that is made by man . . . ." Opp. 12-13; *see Chakrabarty*, 447 U.S. at 309. In particular, Respondent contends that the Congressional reports quoted by this Court in *Chakrabarty* applied the phrase "anything under the sun" to only the "machine" and "manufacture" categories set forth in section 101. Opp. 13. This statement, however, was but one of several factors this Court considered when construing section 101 in *Chakrabarty*. This Court was also informed by the use of the comprehensive modifier "any" introducing the statutory categories as well as statements by the original author of the Patent Act that "ingenuity should receive a liberal encouragement." *Chakrabarty*, 447 U.S. at 308-09 (quoting 5 Writings of Thomas Jefferson 75-76 (Washington ed. 1871)). Applying standard tools of statutory construction, this Court concluded that "Congress plainly contemplated that the patent laws would be given wide scope," *id.*, and that with regard to the statutory term "process" in particular, "we may not be unmindful" of Congressional intent that "statutory subject matter . . . 'include anything under the sun that is made by man.'" *Diehr*, 450 U.S. at 182.

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[7] One *amicus* catalogues several examples of patents for formerly frontier technologies that would not survive the mandatory machine-or-transformation test, including a foundational invention in FM radio technology, the widely-used public key encryption system, and the CDMA technology at the heart of a dominant cellular phone transmission standard. Boston Patent Law Assoc. Br. 14-18.

B. Respondent implies that any expectations upset by the decision below are unfounded. Opp. 15-16. To the contrary, the Federal Circuit's decision in this case has disrupted expectations of patent owners and inventors that were rightly based on this Court's precedent, Federal Circuit precedent, and the plain language of the Patent Act. Because the now-mandatory machine-or-transformation test introduces uncertainties that "not only diminish the incentives available to new enterprise, but disrupt the settled expectations of those who relied on the law as it existed," Pet. App. 61a (Newman, J., dissenting), this Court's review is warranted.

Owners of patents issued since this Court's last two decisions on section 101 relied on a well-settled, flexible standard for patentable subject matter under which only "laws of nature, natural phenomena, and abstract ideas" were excluded from patent-eligibility. *Diehr*, 450 U.S. at 185; *see also, Chakrabarty*, 447 U.S. at 309. Over the past ten years, patent owners and applicants have followed the Federal Circuit's guidance that a process that produces a "useful, concrete and tangible result" is patent eligible, a standard acknowledged by Congress in its 1999 update of the Patent Act. *State Street Bank*, 149 F.3d at 1373; 35 U.S.C. § 273. In light of this long-standing precedent, the settled expectations of patent owners and the inventing public were far from unfounded.

With the decision below, the Federal Circuit has abruptly changed course and overturned years of its own precedent with no new guidance from this Court or Congress. Innumerable[8] patent owners, licensees, and inventors are left with uncertain property rights and a diminished incentive to innovate. This case squarely presents the opportunity for this Court to overturn the mandatory machine-or-transformation test and restore certainty to the patent system.

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[8] One *amicus* estimates that 130,000 patents outside the business methods area are called into question by the decision below. Boston Patent Law Assoc. Br. 24 n.11. Another posits that over one million patents issued since 1992 with process claims are called into question by *In re Bilski*. Philips Electronics Br. 11 & n.6.

CONCLUSION

For these reasons, the petition for a writ of certiorari should be granted.

Respectfully submitted,

J. MICHAEL JAKES
Counsel of Record
ERIKA H. ARNER
FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.
901 New York Avenue, N.W.
Washington, D.C. 20001
(202) 408-4000

RONALD E. MYRICK
DENISE W. DEFRANCO
FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.
55 Cambridge Parkway
Cambridge, Massachusetts 02142
(617) 452-1600

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For The Federal Circuit

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BRIEF OF ACCENTURE AND PITNEY BOWES INC. AS *AMICI CURIAE* IN SUPPORT OF PETITIONERS

◆

WAYNE P. SOBON
ACCENTURE
50 W. San Fernando St.
Suite 1200
San Jose, CA 95113
(408) 817-2170

STEVEN J. SHAPIRO
PITNEY BOWES INC.
35 Waterview Dr.
Shelton, CT 06484
(203) 924-3880

MEREDITH MARTIN ADDY
Counsel of Record
JOEL W. BENSON
CHARLES M. MCMAHON
BRINKS HOFER GILSON & LIONE
455 N. Cityfront Plaza Dr.
Chicago, IL 60611
(312) 321-4200

March 2, 2009

Counsel for Amici Curiae

COCKLE LAW BRIEF PRINTING CO. (800) 225-6964
OR CALL COLLECT (402) 342-2831

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INTEREST OF THE *AMICI CURIAE*[1]

Accenture[2] is one of the world's leading management consulting, technology services, and outsourcing organizations, serving 96 of the Fortune Global 100 and more than three quarters of the Fortune Global 500. Accenture has clients in over 120 countries.

Accenture collaborates with clients to help them become high-performance businesses. This strategy builds on Accenture's expertise in consulting, technology and outsourcing to help clients create sustainable value for their customers and shareholders. Accenture employs more than 186,000 people in 52 countries, and generated net revenues of more than $23 billion for the fiscal year ended August 31, 2008.

Accenture is committed to developing leading-edge ideas. Accenture Technology Labs uses new and emerging technologies to develop business solutions that are designed to drive growth for Accenture's clients and enable them to be first to market with unique capabilities. In fiscal year 2008, Accenture spent at least $390 million in research and development to help create, commercialize, and disseminate innovative business strategies and technology.

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[1] In accordance with Supreme Court Rule 37, Accenture and Pitney Bowes state that this brief was not authored, in whole or in part by counsel to a party, and that no monetary contribution to the preparation or submission of this brief was made by any person or entity other than the *amici curiae* or their counsel.

[2] "Accenture" refers to the Accenture group of companies including Accenture LLP, an Illinois limited liability partnership, doing business on behalf of Accenture within the United States, and Accenture Global Services GmbH, a Switzerland limited liability company, registered owner of many of Accenture's U.S. patents.

Accenture's innovation has resulted in over 360 issued U.S. patents and more than 600 pending U.S. patent applications. Many of the patents and patent applications in Accenture's portfolio are directed to methods for managing or improving a wide variety of business processes within various industrial and organizational settings.

For example, Accenture has developed and implemented supply chain systems that manage transportation logistics for moving products from manufacturing sites to retail stores. In the huge and growing industry of business process outsourcing, Accenture has automated management reporting methods for outsourced business operations. Accenture also has integrated telecommunications services for cable, telephone and the Internet, all operating together with enhanced capabilities and convenience.

These innovations are not exhaustive, but they demonstrate that Accenture is not in the business of promoting abstract ideas. Each and every one of these processes and hundreds of others operate in the real world and provide economic value and business advantages to Accenture and Accenture's clients.

Pitney Bowes Inc. has joined Accenture in this *amicus* brief to encourage the Court to take up this matter and correct a grave mistake of law. Pitney Bowes is a Fortune 500 technology company that delivers service and innovation to more than two million customers worldwide by managing the flow of information, mail, documents, and packages. Pitney Bowes has consistently been an innovation and technology leader, with its patent portfolio dating back over a hundred years.

Now, Pitney Bowes employs about thirty-five thousand people worldwide with annual revenues of approximately $6.3 billion. Since 1976, Pitney Bowes has been issued over 2500 U.S. patents and currently has almost 600 pending U.S. patent applications. Pitney Bowes' diverse patent portfolio includes various hardware and software implemented technologies, but a significant portion of its portfolio concerns methods for managing and improving business operations.

Accenture and Pitney Bowes have no interest in any party to this litigation or stake in the outcome of this case, other than their joint desire for a correct interpretation and application of the United States Patent Laws.

In accordance with Supreme Court Rule 37, counsel for the *amici curiae* provided timely notice to and obtained written consent to the filing of this brief from counsel of record for the parties. The letters of consent have been filed with the Clerk of the Court.

◆

SUMMARY OF THE ARGUMENT

The Federal Circuit majority's decision in *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008), ignores the plain meaning of this Court's precedent and imposes an exclusive and unduly rigid rule for patent eligibility. This Court has denounced such rigid rules. The Court's precedent rings clear not only in the context of patent eligibility, but also in recent decisions addressing other issues of patent law.

Despite repeated counsel from this Court to avoid unduly rigid tests, the Federal Circuit majority disregarded the flexible approach to patent eligibility used in *Gottschalk v. Benson*, 409 U.S. 63 (1972), *Parker v. Flook*, 437 U.S. 584 (1978), and *Diamond v. Diehr*, 450 U.S. 175 (1981). Indeed, the Federal Circuit in *Bilski* struck down an analysis that has worked for more than a century, regardless of the technology. In its place, the Federal Circuit imposed a single, exclusive, and unbending "machine-or-transformation" test for process patent eligibility. This inflexible test violates this Court's precedent, ignores Congressional intent, arbitrarily limits the available scope of patentable processes, and anchors the standard for patent eligibility in the Machine Age of the early 20th century.

The effect of the Federal Circuit's *en banc* decision in *Bilski* is immediate and sweeping, directly impacting current and future patent rights. It unnecessarily ties the process category of 35 U.S.C. § 101 to one of the other categories of that section, such as the "machine" or "manufacture" category. The Court should grant *certiorari* to correct the Federal Circuit's error and to restore process patent eligibility under section 101 to the flexible standard established by this Court before the *Bilski* decision.

◆

INTRODUCTION

The framers of our Constitution understood the importance of rewarding inventors, for limited times, for their creative endeavors. Congress therefore implemented a plan for protecting the rights of the inventor and promoting the advance of the useful arts by broadly drafting the patent statute without technological exclusions, ready to embrace yet unknown innovations.

For more than a century the Court has applied the patent statute using a flexible and broad subject matter analysis to accommodate incredible, sweeping, and unforeseen advances in technology. Without that subject matter flexibility, many of the inventions that made the United States the technology leader of the world would never have been discovered or would have been hidden from the public with no incentive for revelation or commercialization.

Sadly, in its *en banc Bilski* decision, the Federal Circuit took a monumental step backwards. Misinterpreting this Court's precedent, the Federal Circuit rigidly proclaimed that the one test for determining patentable subject matter for process claims requires either a "machine" or a "transformation" from one physical state to another.

Yet, the statute, which always has been broadly construed, requires no such structural limitation. Nor do the cases construing the statute require or even imply any type of rigid rule to determine patent eligible subject matter. Indeed, the cases counsel a more flexible approach. So, in this age when our innovations often transcend "machines" and depend more on the creative and innovative use of information, it is almost inconceivable that the new test for determining patent eligibility harkens back to an age when our primary technology involved manipulating physical things. That era has long ended.

Anchoring the sole test for patentability in a bygone era of primitive physical technology is wreaking havoc with pending applications and issued patents for inventions of an entirely different type. As technology moves from the recognized to the unknown, innovation should be no less protectable under the time-tested mandates of the Constitution than it was in previous eras.

Bilski presents the proper vehicle to set patentable subject matter back on track because: (1) this *en banc* Federal Circuit decision is contrary in logic and theme to this Court's precedent; (2) it turns the settled expectations of the invention community upside down; (3) its effects are already being measurably felt in rejections at the Patent and Trademark Office ("PTO"); (4) it threatens the validity of existing process patents issued under this Court's long-standing and more flexible standard for patent eligibility; and (5) maintaining the *Bilski* rule may discourage inventors from pursuing patents for their valuable new processes.

The PTO, district courts, and the Federal Circuit are now aggressively applying the rigid machine-or-transformation test, causing immediate and irreparable harm. Accenture, Pitney Bowes, and the rest of the inventing community cannot afford to wait for some other, distant section 101 case to correct the Federal Circuit's error.

◆

DISCUSSION

I. THE FEDERAL CIRCUIT'S *BILSKI* TEST IS UNDULY RIGID AND CONTRARY TO THIS COURT'S INSTRUCTION

The Federal Circuit's pronouncement of the "machine-or-transformation" test as the sole test for process patent eligibility defies the patent statute and this Court's interpretation of section 101. The *Bilski* majority now has taken the Court's flexible approach to section 101 and boiled it down to a single, rigid mantra. As the sole means to determine patent eligibility for process claims, this test finds no basis in the statute. The machine-or-transformation test harkens back to the early 20th century, its words reminiscent of the "Machine Age," when steel mills, automobile plants, and skyscrapers were in their heyday.[3] Never before has a test for patent eligibility reflected a particular age of history, much less a bygone era.

A. The Court Has Denounced Rigid Rules in Patent Cases in Favor of More Flexible Approaches

Throughout its patent law decisions, this Court has favored flexible, common-sense approaches over rigid, unbending rules. Patent eligibility under section 101 is no exception. Section 101 broadly defines the scope of patent eligible subject matter:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. § 101. Subject to a few specific exceptions, the Court has interpreted section 101 broadly to encompass new and unexpected categories of invention.

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[3] *See* RICHARD GUY WILSON ET AL., THE MACHINE AGE IN AMERICA 1918-1941 25 (1986).

The few exceptions are a matter of common sense. The Court has excluded laws of nature, natural phenomena, and abstract ideas from patent protection. *Diehr*, 450 U.S. at 185. These limited exclusions have roots extending back at least as far as *LeRoy v. Tatham*, 55 U.S. (14 How.) 156, 175 (1852). The reason for such limited exclusions is simple: the patent system must not grant exclusive rights in such fundamental principles, which by their nature cannot be owned or controlled by any person or entity. *Id.* For example, the Court has refused to permit a patent claim that would "wholly preempt" the use of a mathematical formula. *Benson*, 409 U.S. at 71-72.

In *Benson*, this Court introduced the machine-or-transformation test as a "clue" to patent eligibility. *Id.* at 70. At the same time, the Court explicitly declined to establish this test as the one and only path to process patent eligibility. *Id.* at 71. The focus for exclusion remained, as it has been for more than a century before *Benson*, on whether the claim was directed to one of the specific categories of ineligible subject matter under 35 U.S.C. § 101. *Id.* at 71-72.

The Court rejected the claims in *Benson*, as in *Flook*, because they were directed to abstract mathematical formulas. *Id.*; *Flook*, 437 U.S. at 594. By contrast, the applicant in *Diehr* did not seek to patent or preempt one of the few ineligible categories. 450 U.S. at 187. The majority in *Diehr* considered the machine-or-transformation test, and it included *Benson's* "clue" quote, *id.* at 184, but its focus remained on the categorical exceptions to patent eligible subject matter. *Id.* at 185-92.

The last two sections of the *Diehr* majority opinion describe the true limits on patent eligibility:

> This Court has undoubtedly recognized limits to § 101 and every discovery is not embraced within the statutory terms. Excluded from such patent protection are laws of nature, natural phenomena, and abstract ideas. "An idea of itself is not patentable." "A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right."

Id. at 185 (internal citations omitted).

The majority further noted that the Court's holdings in *Benson* and *Flook* "stand for no more than these long-established principles." *Id.* Addressing each of the *Benson* and *Flook* decisions in detail, the *Diehr* majority explained why the claims in those cases were not patent eligible. In each case, the applicant sought to patent a mathematical formula, which, "like a law of nature, . . . cannot be the subject of a patent." *Id.* at 185-86. The issue was not one of machines or transformation, but of preemption.

These cases weave a common thread that patent eligibility does not extend to certain fundamental principles, including abstract ideas, laws of nature, and mathematical formulas. They also reflect the Court's understanding that the section 101 analysis for a process patent requires a flexible approach. For example, the claim in *Diehr* recited a mathematical formula. Section 101 therefore required an "inquiry . . . into whether the claim is seeking patent protection for that formula in the abstract." *Id.* at 191. The Court made similar inquiries in *Benson* and *Flook*.

In the 28 years since *Diehr*, this Court has not revisited section 101. Yet, the Court's recent decisions on other patent issues maintain the same preference for flexible, common-sense analyses over unbending, bright-line rules. Rigid rules may be easier to apply, but this Court has repeatedly rejected such shortcuts in patent cases.

The Court emphasized the importance of the flexible approach to patent law in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007). The Federal Circuit had adopted a rigid interpretation of obviousness under 35 U.S.C. § 103. This Court rejected the Federal Circuit's rigid "teaching, suggestion or motivation (TSM)" test as the sole test for obviousness. *Id.* at 407, 415. The unanimous Court explained that section 103 "must not be confined within a test or formulation too constrained to serve its purpose." *Id.* at 427.

In another recent case, *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722 (2002), the Court rejected the Federal Circuit's "complete bar test," an unbending approach to the doctrine of prosecution history estoppel. Again speaking unanimously, the Court cautioned, "we have consistently applied the doctrine in a flexible way, not a rigid one." *Id.* at 738.

In its most recent decision of patent law, the Court rejected an inflexible rule excluding method claims from the doctrine of patent exhaustion. *Quanta Computer, Inc. v. LG Elecs., Inc.*, 128 S. Ct. 2109 (2008). The unanimous Court noted, "[o]ur precedents do not differentiate transactions involving embodiments of patented methods or processes from those involving patented apparatuses or materials." *Id.* at 2117. The Federal Circuit had erred by rigidly limiting patent exhaustion to apparatus claims. *Id.* at 2117-18. This Court concluded that the patent exhaustion analysis for a process claim depends on the facts of the particular case, just as it does for an apparatus claim. *Id.* at 2118.

As in *Quanta*, the Federal Circuit's decision in *Bilski* to treat process claims differently from apparatus claims improperly restricts the broad scope of patent eligibility established in section 101.

B. *Bilski* Departs from the Court's Flexible Approach to Section 101 and Imposes an Exclusive, Rigid Rule

The Federal Circuit's new interpretation of section 101 directly conflicts with this Court's controlling decisions. This Court has never held up the machine-or-transformation test as the sole standard of process patent eligibility. *Bilski* is yet another example of the Federal Circuit departing from this

Court's established, flexible approach in favor of a rigid, bright-line rule.

In reaching its decision, the Federal Circuit *Bilski* majority relied heavily on its interpretation of *Benson*, *Flook*, and *Diehr*. Indeed, this Court considered the machine-or-transformation test in each of these three cases. The Federal Circuit's mistake, however, was adopting this as the *only* test for process patent eligibility. This Court's opinions reveal that the machine-or-transformation test is only one example of how a process may satisfy section 101. Rather than dictating one particular rigid and age-anchored test, the Court's section 101 decisions have established the flexible patent eligibility analysis that adapts to new and innovative technologies.

The majority in *Bilski* quotes a passage from *Benson* in which this Court referred to the machine-or-transformation test as "the clue" to patent eligibility: "[t]ransformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines." *Bilski*, 545 F.3d at 979 (quoting *Benson*, 409 U.S. at 70). Taken in isolation, this statement might appear to support the Federal Circuit's interpretation. However, likely anticipating future innovation that no one could predict, this Court rejected the Federal Circuit's interpretation a few paragraphs later in the *Benson* opinion:

> It is argued that a process patent must either be tied to a particular machine or

> apparatus or must operate to change articles or materials to a "different state or thing." *We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.*

409 U.S. at 71. (emphasis added).

The crucial question in *Benson* was not one of machine-or-transformation, but one of preempting a fundamental and patent ineligible category of subject matter. The claim at issue failed to satisfy section 101, not because it failed a rigid machine-or-transformation test, but because it would have "wholly pre-empted" a mathematical formula. *Id.* at 72. Hence, *Benson* does not support the Federal Circuit's new interpretation of the machine-or-transformation test as the *only* way for a process claim to satisfy section 101.

Nor did the Court in *Flook* establish the machine-or-transformation test as the touchstone of patent eligibility. Indeed, the *Flook* Court began by noting that "[t]he line between a patentable 'process' and an unpatentable 'principle' is not always clear. Both are 'conception[s] of the mind, seen only by [their] effects when being executed or performed.'" 437 U.S. at 589 (quoting *Tilghman v. Proctor*, 102 U.S. 707, 728 (1880). This statement hardly supports the exclusive and inflexible rule the Federal Circuit has now imposed.

The *Bilski* majority focuses on one particular sentence in a footnote of the *Flook* opinion: "[a]n argument can be made [that the Supreme] Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a 'different state or thing.'" *Bilski*, 545 F.3d at 979-80 (quoting *Flook*, 437 U.S. at 539 n.9). Again, taken in isolation, this statement might appear to support the Federal Circuit's interpretation. However, this Court squarely rejected that interpretation in the next sentence: "[a]s in *Benson*, we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents." *Flook*, 437 U.S. at 539 n.9.

The second sentence of *Flook's* footnote 9 illustrates the flexibility in this Court's approach to section 101. The analysis is not permanently anchored in the industrial age or limited to a rigid machine-or-transformation test. However, the *Bilski* majority opinion fails to properly account for this critical aspect of the *Flook* decision.

In its analysis of *Diehr*, the Federal Circuit again focused too narrowly on the machine-or-transformation test as "the clue" to patent eligibility. *Bilski*, 545 F.3d at 956 (quoting *Diehr*, 450 U.S. at 184). In doing so, the Federal Circuit missed the broader, flexible approach that the majority applied in *Diehr* – the same approach the Court had used in *Benson* and *Flook*.

The majority in *Diehr* described the machine-or-transformation test, not as *the* test for patent eligibility, but as one *example* of such a test:

> when a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (*e.g., transforming or reducing an article to a different state or thing*), then the claim satisfies the requirements of § 101.

Diehr, 450 U.S. at 192 (emphasis added). The "*e.g.*" in this passage (short for "*exempli gratia*," or "for example") demonstrates that the machine-or-transformation test is just an example, not the exclusive test.

The remainder of the *Diehr* opinion reaffirms this distinction. If the machine-or-transformation test had been the touchstone of patent eligibility, the majority could have ended its opinion after section II. *See Diehr*, 450 U.S. at 184. Instead, the *Diehr* majority continued with sections III and IV, analyzing the claim in detail to determine whether it satisfied section 101 or whether it improperly preempted a mathematical formula. *Id.* at 185-92.

None of this Court's decisions have turned on a rigid application of the machine-or-transformation test. Indeed, this test may have guided the Court in *Benson* and *Diehr*, but the Court has never adopted it as the one and only standard for process patent eligibility. The Federal Circuit's decision to do so now is contrary to this Court's precedent and turns the clock back on the U.S. patent system by a century, where it will remain under *Bilski*.[4]

It is perhaps surprising that the Federal Circuit would adopt a rigid interpretation of section 101 at this particular time. Only two years ago, in *KSR*, this Court rejected the Federal Circuit's rigid interpretation of a related provision in the patent statute. Just as it had reduced section 103 to the bright-line "teaching, suggestion, or motivation" test in *KSR*, the Federal Circuit has reduced section 101 to the rigid machine-or-transformation test. Like the TSM test, the machine-or-transformation test is "too constrained to serve its purpose." *KSR*, 550 U.S. at 427.

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[4] The Federal Circuit's jurisprudential view of this Court's decisions is both curious and disturbing. The Federal Circuit noted that this Court was "equivocal" in the *Benson* and *Flook* decisions, when the Court expressly declined to hold that no process could ever be patentable without satisfying the machine-or-transformation test. *Bilski*, 545 F.3d at 956. The Federal Circuit reasoned, "this caveat was *not repeated* in *Diehr* when the Court reaffirmed the machine-or-transformation test." *Id.* (emphasis in original). By this logic, the Federal Circuit essentially asserts that the Court must repeat every caveat in every subsequent opinion, lest lower courts interpret the Court's silence as overruling its previous decisions. This analysis is contrary to logic and common sense, and it also ignores this Court's use of the "*e.g.*" signal in *Diehr*, which was consistent with the express holdings and flexible approach of *Benson* and *Flook*.

The machine-or-transformation test forecloses patent protection for broad categories of cutting edge innovation. The modern software, financial, and life science industries, among others, all rely on process patents to protect their investment in research and development. These 21st century processes frequently employ useful, specific applications of general principles, and yet do not directly involve "specific machines" or transform an "article" from one state to another. Inventors in these fields therefore risk losing existing and future patent rights if *Bilski's* machine-or-transformation test stands.

The loss of patent rights that could result from *Bilski* is particularly acute because it represents such a dramatic change from previous section 101 standards. Whole categories of claims that the PTO issued under the old standards now face new scrutiny under the machine-or-transformation test.

When the Federal Circuit adopted the "absolute bar test" for the doctrine of equivalents and prosecution history estoppel, this Court rejected the bright-line test: "we have consistently applied the doctrine in a flexible way, not a rigid one." *Festo*, 535 U.S. at 738. The same was true of process patent eligibility under section 101 – until *Bilski* imposed a rigid and exclusive machine-or-transformation test. The Federal Circuit has once again ignored the guidance of *Warner-Jenkinson v. Hilton Davis Chemical Co.*, 520 U.S. 17, 28 (1997), "which instructed that courts must be cautious before adopting changes that disrupt the settled expectations of the inventing community." *Festo*, 535 U.S. at 739.

None of this Court's decisions supports the Federal Circuit's new interpretation of section 101. Rather than following this Court's guidance, the Federal Circuit's *Bilski* opinion has defied controlling precedent. In the face of not only the *Benson*, *Flook*, and *Diehr* decisions, but also the Court's more recent rejections of narrow rules in *KSR* and *Festo*, the Federal Circuit in *Bilski* adopted yet another rigid rule.

C. *Bilski* Ignores Recent Congressional Action that Embraced the Flexible Approach to Section 101

The Federal Circuit's decision to require a rigid machine-or-transformation test also ignores the clear intent of Congress regarding the breadth of patentability, as indicated in the patent laws by 35 U.S.C. § 273. Congress enacted section 273 in 1999 to limit liability for infringement of a business method patent by a prior inventor. The effect of the statute was to reign in potentially unfair enforcement of business method patents that issued due to a lack of relevant prior art at the PTO. However, the statute explicitly recognizes the eligibility of business methods for patent protection. *See* 35 U.S.C. §§ 273(a)(3), 273(b)(1). The majority opinion in *Bilski* makes no mention of this Congressional action, let alone wrestles with its implications.

More important for purposes of the present petition, Congress acknowledged and embraced the "useful, concrete, and tangible result" test, which the Federal Circuit had adopted in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998). The Federal Circuit molded this test to include eligible subject matter under section 101 and to exclude the limited and established categories of ineligible subject matter, such as mathematical formulas. *See id.* at 1373. The test was intended to mirror this Court's long-standing flexible approach to patent eligible subject matter. *Id.* ("Unpatentable mathematical algorithms are identifiable by showing they are merely abstract ideas constituting disembodied concepts or truths that are not 'useful.' From a practical standpoint, this means that to be patentable an algorithm must be applied in a 'useful' way."). At that time, the Federal Circuit noted that "[i]t is improper to read limitations into § 101 on the subject matter that may be patented where the legislative history indicates that Congress clearly did not intend such limitations." *Id.*

When it enacted section 273, Congress embraced this flexible approach, describing the "useful, concrete, and tangible result" test as the "essential question" of patent eligibility. H.R. CONF. REP. NO. 106-464, at 122 (1999) ("[a]s the Court [in *State Street Bank*] noted, the reference to the business method exception had been improperly applied to a wide variety of processes, blurring the essential question of whether the invention produced a 'useful, concrete, and tangible result'"). It is ironic that the Federal Circuit has now departed from this test, less than ten years after crafting it to mirror this Court's precedent. In doing so, the Federal Circuit not only abolished its own test and departed from this Court's precedent; it also disregarded Congressional approval of the flexible approach.[5]

II. THIS CASE IS THE PROPER VEHICLE TO CORRECT THE FEDERAL CIRCUIT'S ERROR AND TO RETURN THE SECTION 101 STANDARD TO A MORE FLEXIBLE APPROACH

This case presents a unique opportunity for the Court to address the standard of process patent eligibility under section 101. Given the procedural posture of *Bilski* and the widespread and immediate impact of the Federal Circuit's *en banc* decision, the Court should grant *certiorari* in this case.

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[5] Indeed, Congress clearly embraced a variety of patentable methods and processes, many of which would fail the new machine-or-transformation test:

> In order to protect inventors and to encourage proper disclosure, this subtitle focuses on methods for doing and conducting business, including methods used with internal commercial operations as well as those used in connection with the sale or transfer of useful end results – whether in the form of physical products, or in the form of services, *or in the form of some other useful results; for example, results produced through the manipulation of data or other inputs to produce a useful result.*

H.R. CONF. REP. NO. 106-464, at 122 (emphasis added).

It may be argued that *certiorari* should be denied here on the ground that the Bilski claims are quite broad and possibly even unduly abstract. One might then counsel the Court to wait for a disputed patent with narrower patent claims. This argument, if made, would miss the whole point of what is at stake here.

Now is the time for the Court to correct the Federal Circuit's erroneous adoption of the rigid machine-or-transformation test – now, at the time the error is made, and before even more damage occurs. *See Festo*, 535 U.S. at 728, 738 (immediately granting *certiorari* to correct the Federal Circuit's then-new bright-line "complete bar" rule on prosecution history estoppel). After rejecting the Federal Circuit's rigid subject matter test, the Court might remand this case for further consideration under the proper, more flexible standard. Or, applying the proper standard itself, the Court might even conclude that the Bilski claims still do not satisfy section 101. Whatever the disposition of the Bilski claims, the more important issue for the entire patent community is for the Court to correct the serious legal error in the Federal Circuit's decision.[6]

The Federal Circuit's *Bilski* decision is affecting patent rights on a daily basis. Accenture and Pitney

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[6] Whether the Bilski claims are patentable at the end of examination is, of course, irrelevant for purposes of identifying the correct process patent eligibility standard.

Bowes, like many other companies in today's economy, depend on patents to protect their investment in technology. This includes not only software and computer network applications, but also the application of management and industrial engineering principles to the organization of businesses, nonprofit groups, and the public sector.[7]

Accenture owns over 360 issued U.S. patents; Pitney Bowes has over 2500. Some of these patents include process claims that might be attacked in light of the holding of *Bilski*. The new *Bilski* standard for process patent eligibility may raise questions about the validity of these previously issued patents and may put some of them or certain of their claims at risk.

Also, Accenture and Pitney Bowes are each pursuing more than 600 pending patent applications at the PTO. In some of these applications, Accenture and Pitney Bowes face section 101 rejections based exclusively on the machine-or-transformation test.

Since *Bilski*, the PTO has continued to reject claims for failure to satisfy the exclusive machine-or-transformation test. Only the PTO knows how many applications examiners have rejected based on this test. However, recent decisions of the Board of Patent Appeals and Interferences indicate that the frequency of section 101 rejections is increasing dramatically and will only continue to increase in the near future. The Board already has cited *Bilski* in at least twenty decisions, rejecting or remanding claims based on the machine-or-transformation test in all but one. The Board also has begun expanding the machine-or-transformation test beyond process claims to reject system claims. *See, e.g.*, *Ex parte Atkin*, 2009 WL 247868, No. 2008-4352, slip op. at *6-7 (B.P.A.I. Jan. 30, 2009) (rejecting system claims 9-13 and 15 as patent ineligible subject matter under *Bilski*.) Similarly, the Board recently rejected claims in an Intel patent application under the machine-or-transformation test even though the claims recited steps performed by a processor. *Ex parte Cornea-Hasegan*, 2009 WL 86725, No. 2008-4742, slip op. at *4 (B.P.A.I. Jan. 13, 2009).

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[7] *Bilski* also is being felt in the life sciences arena, where certain Federal Circuit cases were held pending the *Bilski* decision. At least six parties have filed *amicus* briefs in *Prometheus Lab. v. Mayo Collaborative*, No. 08-1403 (Fed. Cir.) since the *Bilski* decision issued, and briefing is not complete.

To further understand the importance and gravity of the issues involved, it is also helpful to consider the pedigree of the *Bilski* case itself. From the outset, the Federal Circuit ordered the case to be heard *en banc* – even before the original panel issued a decision. Petition App. at 144a. Before the *en banc* hearing, the Federal Circuit received thirty-eight *amicus* briefs. The *amici* represented views from all corners of the patent community, including individual and corporate patent owners, professors, and various bar and industry associations.

In its decision, the Federal Circuit was far from unanimous, illustrating the variety of views within the court itself. Circuit Judges Newman, Rader, and

Mayer each filed dissenting opinions disagreeing with parts of the majority opinion. Perhaps recognizing the controversial and divisive nature of its decision, the *Bilski* majority invited this Court to further review the section 101 standard for process patent eligibility. *Bilski*, 545 F.3d at 956 ("Thus, we recognize that the Supreme Court may ultimately decide to alter or perhaps even set aside this test to accommodate emerging technologies.").

The Court should accept the Federal Circuit's invitation and take this opportunity to correct the Federal Circuit's error and return the section 101 process patent eligibility standard to a more modern and flexible approach that will continue adapting to new technology and crucial developments in the useful arts.

◆

CONCLUSION

For the foregoing reasons, Accenture and Pitney Bowes respectfully request that the Court grant *certiorari* to restore the Court's flexible approach to patent eligible subject matter and to preserve broad access to the U.S. patent system.

Respectfully submitted,

WAYNE P. SOBON
ACCENTURE
50 W. San Fernando St.
Suite 1200
San Jose, CA 95113
(408) 817-2170

STEVEN J. SHAPIRO
PITNEY BOWES INC.
35 Waterview Dr.
Shelton, CT 06484
(203) 924-3880

MEREDITH MARTIN ADDY
Counsel of Record
JOEL W. BENSON
CHARLES M. MCMAHON
BRINKS HOFER GILSON & LIONE
455 N. Cityfront Plaza Dr.
Chicago, IL 60611
(312) 321-4200

Counsel for Amici Curiae
Accenture & Pitney Bowes

AMICUS
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BRIEF

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In The Supreme Court Of The United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Respondent.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF *AMICUS CURIAE* AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION IN SUPPORT OF THE PETITION FOR A WRIT OF CERTIORARI

WILLIAM K. WEST, JR.
Counsel of Record
PAMELA S. KANE
1299 Pennsylvania Avenue, NW
Washington, D.C. 20004
(202) 783-0800

Counsel for Amicus Curiae
American Intellectual Property
Law Association

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INTRODUCTION AND STATEMENT OF INTEREST OF *AMICUS CURIAE*[1]

Although Petitioners' patent application specifically relates to a "business method," the questions presented directly affect innovation in many other existing and unknown future types of technology. In fashioning a new and unprecedented rule that restricts the patent-eligibility threshold to only those processes that are tied to a machine or that transform substances to a different form, the Federal Circuit has effectively curtailed innovation in as yet unknown, future areas of discovery as well as disrupted settled expectations concerning issued patents in many existing technologies.

The American Intellectual Property Law Association ("AIPLA") is a national bar association of more than 16,000 members engaged in private and corporate practice, in government service, and in the academic community. AIPLA represents a wide and diverse spectrum of individuals, companies, and institutions involved directly and indirectly in the practice of patent, trademark, copyright, and unfair competition law, as well as other fields of law affecting intellectual property. AIPLA members represent both owners and users of intellectual property.

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[1] This *amicus curiae* brief is presented by the American Intellectual Property Law Association under Supreme Court Rule 37.3(a). Petitioner has consented to the filing of this *amicus curiae* brief via blanket letter of consent on file with the Court, and respondent has consented via a separate letter of consent dated February 4, 2009. In accordance with Supreme Court Rule 37.6, *amicus curiae* states that no counsel for a party authored any part of this brief. Only this *amicus curiae* made monetary contribution to the preparation and submission of this brief. Counsel for *amicus curiae* prepared this brief on a *pro bono* basis.

AIPLA takes no position on the merits of Petitioners' alleged innovation and on whether their application ultimately should or should not receive a patent, as AIPLA's sole interest is in assuring that the patent law continues to provide the incentives that serve the Constitutional purpose of promoting the progress of science and the useful arts.

In accordance with Rule 37 of this Court, AIPLA has notified and obtained the consent of both Petitioners and Respondent to file this amicus brief.

REASONS FOR GRANTING THE PETITION

I. THE PETITION PRESENTS IMPORTANT ISSUES OF FEDERAL LAW

The paths that discovery and innovation may take are unknown and unpredictable. The Twentieth Century Industrial Age saw inventions no one could have imagined just a century before. Now, this century is in the midst of the development of the Information Era. Operations that required the use of room-sized machines only a few years ago are done now on home computers. Computations formerly done by hand are now performed by integrated circuit chips smaller than a fingernail. Frequently, there is no longer a physical structure responsible for these operations. One might describe them as ethereal or transient, effected by software in networks, but this is the direction of today's innovation.

In the future, society can look forward to innovations and advances in the emerging fields of nanotechnology, biotechnology, health sciences and personalized medicine. As technology thus ventures from the recognized into the unknown, innovation should be no less protectable than in previous eras of transition. As the Federal Circuit earlier recognized, "The sea-changes in both law and technology stand as a testament to the ability of law to adapt to new and innovative concepts, while remaining true to basic principles."[2]

The Federal Circuit majority, however, has now misinterpreted this Court's precedents and held that to be patent-eligible under 35 U.S.C. § 101, any "process" *must* (1) be tied to a particular machine or apparatus, or (2) transform a particular article into a different state or thing (the "machine or transformation" test). Pet. App. at 12a. The Federal Circuit majority did not limit its new test to any particular class of process or method, but applies it to all manner of processes and methods, present and future, even though the majority acknowledged that existing advances in technology already have "begun to challenge" the suitability of its test. Pet. App. at 17a. Technologies already impacted by the Federal Circuit's "machine or transformation" test include processes relating to computer software (not tied to a specific machine), processes relating to the administration of medicines and therapeutic treatments, and biotechnology. Circuit Judge Newman observed in her dissenting opinion that the full extent of the "impact on the future, as well as on the thousands of patents already granted, is unknown." Pet. App. at 60a (Newman, Circuit Judge, dissenting).

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[2] *AT&T Corp. v. Excel Commc'ns, Inc.*, 172 F.3d 1352, 1356 (Fed. Cir.), *cert. denied*, 528 U.S. 946 (1999).

As in *Diamond v. Chakrabarty*, 447 U.S. 309 (1980), and *Diamond v. Diehr*, 450 U.S. 180 (1981), the Petition presents questions concerning the proper construction of the patent statute that extends patent eligibility (but, importantly, *not* patentability) to "*any* new and useful *process*, machine, manufacture, or composition of matter, or any new and useful improvement thereof, *subject* to the conditions and requirements of this title." 35 U.S.C. § 101 (emphasis added).

The issue of Federal law thus presented by the decision of the Federal Circuit is not limited to so-called "business method" patents but, as stated and now applied by both the Federal Circuit and the United States Patent and Trademark Office ("PTO"), affects *every* "process" in *every* technology, including both existing technologies and those yet-to-be-discovered. However, this "machine or transformation" test is not a "test" found in the Patent Statute, its legislative history, or in the prior decisions of this Court. Regrettably, this test is derived from and tied to the vocabulary of technologies developed in earlier ages, and thus is backward-looking and ill-fitted to future discoveries and technologies as yet unimagined.

The Federal Circuit's quest for "bright-line" tests to help ease the administrative burdens of the Patent Office is worthy, but to fashion a new and rigid eligibility test to be applied at the very doorstep of the Office is inappropriate. It contravenes the expressed intent of Congress and conflates patent eligibility with patent worthiness. The latter issue is better dealt with by an exacting application of the conditions for patentability codified in 35 U.S.C. §§ 102, 103 and 112. Restricting eligibility to *only* those processes that are either tied to a specific machine or that transform a material, however, minimizes incentives for development of future, and potentially very valuable, technologies. As a result, the Constitutional purpose of promoting the progress of science and the useful arts likely will be undermined rather than served.

Contrary to the Federal Circuit majority's conclusion, this Court has never imposed or suggested a rigid "machine or transformation" test. The majority saw that processes were described in this Court's precedents in terms applicable to the technologies then before the Court, but failed to recognize that these descriptions were not intended as limitations to be applied to all future technological developments. Indeed, this Court has repeatedly denied any such intention. In *Parker v. Flook*, 437 U.S. 584 (1978), this Court clearly stated that "a valid process patent may issue even if it does not meet one of these qualifications [transformation or machine-implementation] of our earlier precedents." *Id.* at 589 n.9; *see also Gottschalk v. Benson*, 409 U.S. 63, 71 (1972).

II. THE FEDERAL CIRCUIT'S "MACHINE OR TRANSFORMATION" REQUIREMENT MISINTERPRETS THIS COURT'S PRECEDENTS AND UNWISELY REDUCES INCENTIVES FOR NEW TYPES OF INNOVATION

A. The Governing Standard Regarding the Patent Eligibility of Process Claims Is Found in Section 101 and Its Legislative History

This case turns on the interpretation of Section 101 of the Patent Act, which describes the subject matter eligible for patent protection, and more specifically on the patent eligibility of a "process" under that statute. In such cases of statutory construction, this Court traditionally begins with the language of the statute. *Diehr*, 450 U.S. at 181-82. Section 101 reads in relevant part: "Whoever invents or discovers any new and useful process...may obtain a patent therefor, subject to the conditions and requirements of this title." 35 U.S.C. § 101.

"Unless otherwise defined, 'words will be interpreted as taking their ordinary, contemporary, common meaning.'" *Diehr*, 450 U.S. at 182 (quoting *Perrin v. United States*, 444 U.S. 37, 42 (1979)). This Court has repeatedly recognized that Congress intended § 101 to have a broad construction: "In choosing such expansive terms as 'manufacture' and 'composition of matter,' modified by the comprehensive 'any,' Congress plainly contemplated that the patent laws would be given wide scope." *Chakrabarty*, 447 U.S. at 308. Indeed, "[t]he subject-matter provisions of the patent law have been cast in broad terms to fulfill 'the constitutional and statutory goal of promoting 'the Progress of Science and the useful Arts' with all that means for the social and economic benefits envisioned by Jefferson." *Id.* at 315.

The *Chakrabarty* Court recognized that the legislative history of § 101 further supports a broad reading:

> The Patent Act of 1793, authored by Thomas Jefferson, defined statutory subject matter as "any new and useful art, machine, manufacture, or composition of matter, or any new or useful improvement [thereof]." The Act embodied Jefferson's philosophy that "ingenuity should receive a liberal encouragement." Subsequent patent statutes in 1836, 1870, and 1874 employed this same broad language.

Id. at 308-09 (citations omitted).

Further, the Committee Reports accompanying the 1952 Patent Act, in which Congress replaced the word "art" with the word "process," "inform us that Congress intended statutory subject matter to 'include anything under the sun that is made by man.'" *Diehr*, 450 U.S. at 182 (quoting S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H.R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952)).

This is not to say there are no limits to what is patent-eligible. "Excluded from such patent protection are laws of nature, natural phenomena, and abstract ideas." *Diehr*, 450 U.S. at 185 (citation omitted). Such discoveries are "'manifestations of . . . nature, free to all men and reserved exclusively to none.'" *Chakrabarty*, 447 U.S. at 309 (citation omitted). They cannot be "invented" by man, or are abstract and not "useful," and thus are excluded from patent eligibility.

The Federal Circuit majority, however, has done exactly what this Court has repeatedly cautioned against – it has read "'into the patent laws limitations and conditions which the legislature has not expressed.'" *Chakrabarty*, 447 U.S. at 308 (quoting *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 199 (1933)). Nothing in § 101 nor its legislative history qualifies or limits patentable "processes" to those that transform physical matter or are performed by machines. Imposing such a limiting test contravenes the expressed intent of Congress.

B. This Court's Precedents Neither Hold Nor Suggest That, To Be Patent-Eligible Under Section 101, A Process Must Result In A Physical Transformation Or Be Tied to A Machine

There is no support in this Court's precedent for the Federal Circuit majority's conclusion that this Court enunciated a definitive "machine or transformation" test for determining the patent eligibility of a claimed process under § 101. The precedents cited by the Federal Circuit majority neither hold nor suggest that a claimed process is patent-eligible *only* if "(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing." Pet. App. at 12a.

The Federal Circuit majority based its conclusion on four prior decisions of this Court and primarily upon misinterpretation – and misapplication – of a single statement (made *in dicta*) in *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972), that "[t]ransformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines." *See, e.g.*, Pet. App. at 12a. This "transformation and reduction of an article 'to a different state or thing'" language originated in this Court's opinion in *Cochrane v. Deener*, 94 U.S. 780 (1877).

However, *Cochrane* neither held nor suggested that, to be patent-eligible, a process *must* result in a physical transformation. Instead, *Cochrane* considered whether a process for improving the qualities of superfine flour may be infringed irrespective of the tools used by the alleged infringer to effect the desired result of the process. *Id.* at 788. The patentee claimed that his invention was in the process itself, and "not limited to any special arrangement of machinery." *Id.* at 785. It was in the context of that level of technology (first separating the superfine flour and then purifying the flour-producing portions of the middling-meal prior to regrinding), and with that perspective, that *Cochrane* characterized a "process" as "an act, or a series of acts, performed upon the subject matter to be transformed and reduced to a different state of thing." *Id.* at 788. Nothing in *Cochrane* suggested that, to be patent-eligible, every future "act or series of acts" must transform subject matter into a different state or thing.

Similarly, nothing in *Gottschalk v. Benson*, 409 U.S. 63 (1972), required a process be "tied to a particular machine" or "transform a particular article into a different state or thing" to be patent-eligible. In fact, despite its "[t]ransformation ... is the clue to the patentability of a process claim" statement, on which the Federal Circuit majority hinged its opinion, *Benson* actually *refused* to adopt a "machine or transformation" test, stating: "It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing.' We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents." *Benson*, 409 U.S. at 71. Indeed, *Benson* reasoned that a claim to a process that converted (*i.e.*, transformed) binary code decimal numerals into pure binary numerals was, in practical effect, merely a claim to *an abstract idea*, and therefore ineligible subject matter. *Id.* at 71-72.

The Federal Circuit majority's reliance on *Parker v. Flook*, 437 U.S. 584 (1978), is also misplaced. The Court in *Flook* rejected the application in question because it sought to patent the equivalent of a fundamentally non-patentable law of nature (a mathematical formula). 437 U.S. at 595-96, *not* because it failed to tie that formula to a particular machine or failed to transform a particular article into a different state or thing. Indeed, the Court again dismissed the notion that, to be patent-eligible, a process patent must be "tied to a particular apparatus or operated to change materials to a 'different state or thing.'" *Id.* at 589 n.9 (quoting *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1877)). Instead, *Flook*, "[a]s in *Benson*, ... assume[d] that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents." *Flook*, 437 U.S. at 589 n.9 (citing *Benson*, 409 U.S. at 71).

In the fourth precedent, *Diamond v. Diehr*, 450 U.S. at 177-78, this Court considered the patent eligibility of a process for molding raw, uncured synthetic rubber into cured precision products. *Id.* at 177-78. Contrary to the Federal Circuit majority's statement, Pet. App. at 16a, *Diehr* did not "once again" apply the machine-or-transformation test in assessing the patent eligibility of this claimed process.

Rather, *Diehr* recognized that processes that transform an article into a different state or thing – such as the process of curing raw rubber at issue – merely exemplify "the types [of processes] which have historically been eligible to receive the protection of our patent laws." 450 U.S. at 184 (emphasis added); *see also id.* at 192-93 ("when [a claimed invention] . . . is performing a function which the patent laws were designed to protect (*e.g.*, transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101"). *Diehr* nowhere suggests that transformation is required for a process to fall within the § 101 categories of possible patentable subject matter.

Indeed, in considering whether the use of a well-known mathematical equation as a part of the claimed curing process precluded patent eligibility, *Diehr* emphasized that the *only* limits to patent eligibility are those processes that claim the "laws of nature, natural phenomena, and abstract ideas." *Diehr*, 450 U.S. at 185. Further, *Diehr* confirmed that this Court's holdings in *Benson* and *Flook* "stand for no more than these long-established principles." *Id.*

Accordingly, none of the decisions of this Court relied on by the Federal Circuit either hold or suggest that a process is patent-eligible only if it is tied to a machine or it transforms a particular article into a different state or thing. Rather, each of those decisions emphasize that a process will fall within eligible subject matter under § 101 unless it claims "laws of nature, natural phenomena, [or] abstract ideas." *Diehr*, 450 U.S. at 185; *see also Flook*, 437 U.S. at 589.

C. Other Precedents Overlooked By The Federal Circuit Confirm The Absence In This Court Of Rigid Tests Under Section 101

Without any explanation, the Federal Circuit majority's opinion bypassed two important decisions of this Court – *Diamond v. Chakrabarty*, 447 U.S. 303 (1980), and *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred International, Inc.*, 534 U.S. 124 (2001) – that addressed § 101 statutory classes other than "process," but nevertheless confirmed the absence in this Court of any rigid limitations on patent eligibility.

In *Chakrabarty*, the respondent's application included process claims to the method of producing a new type of bacterium capable of breaking down components of crude oil (a property not possessed by naturally occurring bacteria) and claims to the genetically-engineered bacteria. 447 U.S. at 305. The patent examiner rejected the claims to the bacteria on two grounds: "(1) that micro-organisms are 'products of nature,' and (2) that as living things they are not patentable subject matter under 35 U.S.C. § 101." *Id.* at 306.

In ruling that the claimed micro-organism, although technically "alive," constituted patent-eligible subject matter, *Chakrabarty* considered – and rejected – the argument that patent eligibility should not extend to new technologies that were not foreseen and expressly authorized by Congress, such as the genetically-engineered micro-organisms then at issue. *See id.* at 314-16. The Court reasoned that "[a] rule that unanticipated inventions are without protection would [not only] conflict with the core concept of the patent law that anticipation undermines patentability," *id.* at 315-16, but would also frustrate Congress' intent in employing broad general language in § 101 – *i.e.*, that the inventions most benefiting mankind, such as "those that 'push back the frontiers of chemistry, physics, and the like," are generally unforeseeable. *Id.* at 316. The Court confirmed that patent eligibility should be scrutinized instead under "'the principles underlying the prohibition against patents for "ideas" or phenomena of nature.'" *Id.* at 315 (citation omitted).

Twenty years later, in *J.E.M. Ag Supply*, the Court again considered the scope and application of patent eligibility under § 101. Faced with the question of whether newly-engineered corn plant breeds fell within § 101, the Court specifically addressed whether eligibility should be governed by what was foreseen at the time the patent laws were drafted. Reaffirming that "the language of § 101 is extremely broad" and that "Congress plainly contemplated that the patent laws would be given wide scope," 534 U.S. at 130, this Court again refused to adopt as a test for patent-eligible subject matter whether the invention was of a type expressly authorized by Congress. *Id.* at 134-35. The Court recognized that "101 ... is a dynamic provision designed to encompass new and unforeseen inventions," and that "[d]enying patent protection under § 101 simply because such coverage was thought technologically infeasible in 1930...would be inconsistent with the forward-looking perspective of the utility patent statute. As we noted in *Chakrabarty*, 'Congress employed broad general language in drafting § 101 precisely because [new types of] inventions are often unforeseeable.'" *Id.* at 135 (citation omitted).[3]

Thus, both *Chakrabarty* and *J.E.M. Ag Supply* affirm this Court's recognition of the broad scope and applicability of § 101, and a wise reluctance to engraft "tests" on § 101 that might limit patent eligibility to known technologies of the past or foreclose possibilities offered by new and unanticipated technology.

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[3] *Accord, Benson*, 409 U.S. at 71: "[It is not our purpose to] freeze process patents to old technologies, leaving no room for the revelations of the new, onrushing technology."

D. The Federal Circuit's Standard Is Backward Looking, And Can Only Restrict, Rather Than Promote, New Innovative Technologies

1. There is no logical connection between the "machine or transformation" test and whether the claimed process is a law of nature, etc.

At the outset of its opinion, the Federal Circuit majority recognized that this Court has repeatedly held that "a claim is not a patent-eligible 'process' if it claims 'laws of nature, natural phenomena, [or] abstract ideas'" because "[s]uch fundamental principles are 'part of the storehouse of knowledge of all men ... free to all men and reserved exclusively to none.'" Pet. App. at 7a-8a (citations omitted). The Federal Circuit then identified as "[t]he true issue before us ... whether Applicants are seeking to claim a fundamental principle (such as an abstract idea) or a mental process." Pet. App. at 8a.

Rather than addressing this "true issue" directly, however, the Federal Circuit majority instead formulated its "machine or transformation" test. But the majority failed to connect this test in any way to its "true issue": this Court's long-standing principle of measuring patent eligibility by whether a process claims "laws of nature, natural phenomena,

[or] abstract ideas." Nor did the majority provide any rationale showing a need for such a new and radical limitation on § 101.

The Federal Circuit majority did not explain how a process that meets this "machine or transformation" test – *i.e.*, a process that is "tied to a particular machine or apparatus" or a process that "transforms a particular article into a different thing" – *necessarily* excludes "laws of nature, natural phenomena, [or] abstract ideas." The majority opinion thus never provides a logical connection between the "machine or transformation" test and this Court's principle that only claims to "laws of nature, natural phenomena, or abstract ideas" are precluded from patent eligibility.

Further, the majority did nothing to show that its "machine or transformation" test avoids conflict with this Court's application of "abstract idea" principles in *Flook* (rejecting a process claim to a mathematical "law of nature" tied to a computer), (437 U.S. at 595), and in *Benson* (rejecting a process that converted (*i.e., transformed*) BCD numerals into binary numerals) to determine ineligible subject matter. *Benson*, 409 U.S. at 71-72.

Indeed, as one dissent (Rader, J.) recognized, the majority's "machine or transformation" test does nothing more than generate more questions, such as "What form or amount of 'transformation' suffices? When is a 'representative' of a physical object sufficiently linked to that object to satisfy the transformation test? ... What link to a machine is sufficient to invoke the 'or machine' prong? Are the specific machines of *Benson* required, or can a general purpose computer qualify?" Pet. App. at 142a. Thus, the Federal Circuit's "machine or transformation" test not only fails to fill an existing need in the law, but raises more questions than it can resolve.

2. The "machine or transformation" test is backward looking only, but has important adverse ramifications for future innovation

Contrary to this Court's precedents broadly construing § 101 in accordance with its legislative history, the Federal Circuit's majority engrafted onto the statute limitations that are entirely backward-looking, as forcefully pointed out in the dissents of Circuit Judges Newman and Rader. Pet. App. at 93a-94a and 134a, 143a. Indeed, the Federal Circuit's limitations are crafted from words and concepts that originated in *Cochrane,* in a by-gone horse-and-buggy era. They should not rigidly dictate what processes may or may not be patent-eligible for future generations.

The Federal Circuit majority acknowledged as much in stating that its "machine or transformation" test for eligibility may already be inappropriate and challenged by "future developments in technology and the sciences." Pet. App. at 17a. The majority's recognition that its test may need to give way in the near future, however, is hardly a compelling argument for introducing sweeping limitations at the present time. Indeed, technologies that would further challenge suitability of the "machine or transformation" test may not appear at all if the incentives to develop them disappear now.

Moreover, there are several difficulties with the majority's assumption that its error, if any, in imposing a rigid test readily can be corrected in the future. First, its decision has both immediate and potentially long-lasting consequences. The PTO is applying the "machine or transformation" test to all manner of processes, not just "business methods." This has a chilling effect on incentives to devote resources to new areas of innovation. In the current global economic climate, incentives for new technological breakthroughs should be encouraged, not discouraged. The public interest is best served if the United States Patent system remains open to all forms of technological development. If it does not remain open, such developments can happen outside the United States Patent system, and without its requirements for public disclosure and limited periods of exclusivity. Worse yet, such developments may not happen at all.

Second, a Court of Appeals or this Court, unlike a legislature, cannot announce a change in the law on its own initiative, but is limited by the Constitution to hearing and deciding "cases or controversies" properly brought before it. U.S. Const. art. III. A patent application must wind its way through the Patent Office, sometimes for years, then await a decision by the PTO's internal appeals Board, which may consume several more years before decision. Thus, much time may pass before there is a ripened issue that will present an opportunity for the Federal Circuit to reconsider the "machine or transformation" test. Moreover, based on its precedents, a single panel of the Federal Circuit can not revise the test; instead, the court must first agree to go *en banc* to revise it. Thus, the Federal Circuit actually has much less flexibility to reconsider its test than the majority opinion suggests.

Regardless of whether it would take years or decades to reconsider the "machine or transformation" test, incentives to innovate in new technologies that may not meet the test will have been jeopardized, with the time lost, or the opportunities forgone, perhaps never fully recoverable.

III. THIS COURT'S DECISIONS UNIFORMLY REFLECT A WISE OPENNESS TO NEW TYPES OF INNOVATIONS, EXCLUDING ONLY CLAIMS TO LAWS OF NATURE, NATURAL PHENOMENA AND ABSTRACT IDEAS

1. The Courts Have Fulfilled Congress's Intent to Construe Section 101 Broadly

As shown by the precedents cited herein, this Court's opinions have uniformly been open to patent eligibility of new types of innovation undreamed of at the time of *Cochrane* in 1876. *See, e.g., Chakrabarty*, 447 U.S. at 309 (patentable subject matter includes "anything under the sun that is made by man") (citation omitted); *J.E.M. Ag Supply*, 534 U.S. at 135 ("Denying patent protection under § 101 simply because such coverage was thought technically infeasible [previously] would be inconsistent with the forward-looking perspective of the utility patent statute."). This Court's decisions clearly have not excluded particular technologies, and have embraced even new or unusual types of processes. *See, e.g., Diehr*, 450 U.S. at 185-86 (recognizing that a process claiming a mathematical formula and a programmed digital computer is not precluded *per se* from patent eligibility). To the extent this Court has refused patent eligibility, it has done so based on the facts of each case and application of the long-standing principle that excludes claims to "laws of nature, natural phenomena, and abstract ideas. *Id.* at 185; *Chakrabarty*, 447 U.S. at 315; *Flook*, 437 U.S. at 589; *see also Benson*, 409 U.S. at 71.

Laws of nature, physical phenomena, and abstract ideas exist in the public domain for all time. *See, e.g., Diehr*, 450 U.S. at 185. An inventor is not entitled to claim one of these basic principles in isolation because to do so would remove it from the public. *Id.* Yet, this protection of the public commons does not place limits or exclusions on the subject matter of the four specified categories of § 101; instead, it provides guidance to the decision-maker to avoid removal from the public of natural or scientific principles.

2. Solutions to overly broad patent claims exist that do not require engrafting limitations on Section 101

To the extent it may be feared that certain patents, including "business method" patents, contain overly broad claims, solutions lie (a) in this Court's precedents that, *e.g.*, refuse eligibility to "abstract ideas," and (b) in other sections of the patent statute.

First, as noted above, this Court has found no difficulty in rejecting the eligibility of specific patents and applications on the basis of the long-standing principle excluding "laws of nature, natural phenomena and abstract ideas." That principle has been widely followed and successfully applied by the lower courts and the PTO. As also noted, the Federal Circuit majority identified no specific difficulty in application of that principle, nor any new, pressing need for an additional, more restrictive test. Indeed, one dissenter, Circuit Judge Rader, would have dealt with Petitioners' application solely on the basis of "abstract idea." Pet. App. at 134a, 142a.

Second, simply because an invention contains patent-eligible subject matter does not mean that a patent should issue. Indeed, as this Court recognized in *Diehr*, a determination that claims recite subject matter that is eligible for patent protection under § 101 does not preclude a finding later that a "process is not deserving of patent protection because it fails to satisfy the statutory conditions of novelty under § 102 or nonobviousness under § 103." 450 U.S. at 191; *see Flook*, 437 U.S. at 600 (Stewart, J. and Rehnquist, J., dissenting) ("Section 101 is concerned only with subject matter patentability. Whether a patent will actually *issue* depends upon the criteria of §§ 102 and 103, which include novelty and inventiveness, among many others.").

The legislative history is in accord, stating that "Section 101 sets forth the subject matter that can be patented, 'subject to the [other] conditions and requirements of this title.'" *Diehr*, 450 U.S. at 190 (quoting S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952)). As also recognized by one *Bilski* dissenter, Circuit Judge Rader, "the Patent Act from its inception focused patentability on the specific characteristics of the claimed invention-its novelty and utility-not on its particular subject matter category .... Specifically, section 101 itself distinguishes patent eligibility from the conditions of patentability-providing generously for patent eligibility, but noting that patentability requires substantially more." Pet. App. at 135a-136a.

Rather than imposing a rigid test on § 101 that threatens the eligibility of new technologies, questions of whether a given advance is patentworthy are better dealt with by application of sections 102 (requiring novelty), 103 (requiring nonobviousness) and 112 (requiring a "written description of the invention," a "best mode" and "distinctly claiming the subject matter"). *See, e.g.*, *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 415

(2007). As one *Bilski* dissenter noted (Rader, J.), "[t]hese statutory conditions and requirements better serve the function of screening out unpatentable inventions than some vague 'transformation' or 'proper machine link' test." Pet. App. at 142a.

The Federal Circuit's rigid approach to subject matter eligibility undercuts this Court's precedent by foreclosing at the initial § 101 analysis any additional inquiry into patentability. This not only upsets basic principles of patent law, but threatens incentives to produce valuable and unforeseeable future innovations.

3. Any changes in the broad scope of Section 101 should be left to Congress

When the Constitution was written, the Framers wisely provided authorization for a patent system that would provide incentives for innovations in the "useful arts," but could not have foreseen the myriad developments and discoveries that would occur over the following centuries. Thus, the Framers correctly left it to Congress to determine, and to modify, as events necessitated, the types or classes of things that could be the subject of an exclusive right. Congress, of course, has broad powers to initiate investigations, hold hearings, gain insights from interested parties from a broad range of technologies, and can ultimately determine the proper balance and need, if any, for new limitations on patent eligibility.

This Court has never treated the classes of eligible subject matter established by Congress in § 101 – "process, machine, manufacture, or composition of matter" – as rigid limitations, but rather as "expansive" guideposts. *J.E.M. Ag Supply*, 534 U.S. at 130 (citing *Chakrabarty*, 447 U.S. at 308). Section 101 is thus "a dynamic provision designed to encompass new and unforeseen inventions." *J.E.M. Ag Supply*, 534 U.S. at 135.

In construing § 101, this Court has frequently noted the dangers in reading in limitations to patent eligibility not expressly authorized by Congress.

> [W]e have more than once cautioned that "courts 'should not read into the patent laws limitations and conditions which the legislature has not expressed.'" *Diamond v. Chakrabarty*, *supra*, at 308, 100 S.Ct., at 2207 quoting *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 199, 53 S.Ct. 554, 561, 77 L.Ed. 1114 (1933).

Diehr, 450 U.S. at 182. Such deference is wise, and has served the public interest by allowing the patent system to remain dynamic and able to accommodate new forms of innovation. Consideration of whether any limitations or conditions need to be added to § 101 should continue to be left to Congress.

CONCLUSION

The AIPLA respectfully requests this Court grant the Petition for Certiorari, review the *en banc* decision of the Federal Circuit, reject that court's "machine or transformation" test and affirm that patent eligibility for "processes" remains as expressed by this Court in *Diehr*.

Respectfully submitted,

WILLIAM K. WEST, JR.
Counsel of Record
PAMELA S. KANE
1299 Pennsylvania Ave., NW
Washington, D.C. 20004
(202) 783-0800

Attorneys for *Amicus Curiae*
American Intellectual Property
Law Association

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No. 08-964

IN THE
THE SUPREME COURT OF THE UNITED STATES

Bernard L. BILSKI and Rand A. Warsaw,
Petitioners

v.

John J. DOLL, Acting Under Secretary of Commerce for Intellectual Property and Acting Director, Patent and Trademark Office
Respondent

ON PETITION FOR WRIT OF CERTIORARI TO THE COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF AMICA CURIAE ANNE E. BARSCHALL, PRO SE IN SUPPORT OF PETITIONERS

ANNE E. BARSCHALL
80 Benedict Avenue
Tarrytown, NY 10591
914-332-1019
pro se

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STATEMENT OF AMICA'S INTEREST[1]

The author is a sole practitioner patent attorney who has been interested in the field of patentable subject matter for over 25 years. She argued the case of In re Trovato[2], a case in this same field. She has not been paid for this brief. It represents her concern for sensible jurisprudence and the advancement of patent law. Her undergraduate degree is in physics. She has worked professionally as a computer programmer and taken both graduate and undergraduate courses in computer science.

SUMMARY OF ARGUMENT

The law with respect to patentable subject matter contains flaws in reasoning that have led to endless litigation and therefore need to be reviewed and corrected. *Dicta* from various cases that have been erroneously recited as law should be repudiated. The example here, in the area of "Business Methods," requires deliberation in light of corrected reasoning to yield sound outcomes and resolve inconsistencies between cases, whatever the conclusion the Court may reach, though this brief takes the position that the claims at hand should be patentable subject matter.

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[1] Both parties were notified at least 10 days before the filing of this brief. Both parties have consented to the filing of this brief. Neither party has written this brief or contributed financially to it.

[2] *In re Trovato*, 60 F.3d 807; 1995 U.S. App. LEXIS 20022; 35 U.S.P.Q.2D (BNA) 1570,(Fed. Cir. *en banc* 1995) *below* 42 F.3d 1376; 1994 U.S. App. LEXIS 35544; 33 U.S.P.Q.2D (BNA) 1194, December 19, 1994, Decided , As Amended January 3, 1995. Vacated by the Court on Grant of Rehearing of July 25, 1995, Reported at: 1995 U.S. App. LEXIS 20022

ARGUMENT

Introduction

The field of patentable subject matter under 35 U.S.C. 101[3] is one of the most fascinating fields of the law, invoking the deepest philosophy and metaphysics, where thought meets matter, matter meets energy, and the fundamental nature of creation is to be considered.[4]

Technical training and technically trained employees are expensive, but such training and employees are necessary to develop improved goods and services. Especially in the current economic environment, the Court must see that those who hire for research and development need economic protection for that investment. Even if the reward seems broad, it is time-limited. The Court should therefore not cast whole areas of technology out of the field of patentable subject matter.

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[3] Whoever invents or discovers any new and useful process, machine, manufacture or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore....

[4] The field is so fascinating that the preeminent treatise in this area, *Chisum on Patents* (Lexis Publishing 2008) §1.03[6] n.200 p.1-168 includes a seven page footnote listing articles on the topic. Moreover, there are an astounding number of cases in the area, but this brief will be particularly focused on why poor reasoning in certain leading cases has given rise to this whole flood of paper.

Those who seek to reproduce results first developed by others will naturally loudly proclaim that their innovation is stifled by intellectual property law. Their cries are not dissimilar from those of the angry driver, stopped for speeding, who feels entitled to violate the speed limits due to his or her own personal haste. The speed limits, like the patent law, serve a valuable purpose.

O'Reilly v. Morse[5] *and Parker v. Flook*

In this case, the issue of patenting a "principle" was considered. A closer review of the facts of *Morse* reveals that statements about this issue were *obiter dicta* in that case at the time and, additionally, are no longer precedential due to changes in statute and case law.

The *Morse* Court, in examining the topic, first looked at a prior case, *Neilson v. Harford* in the English Court of Exchequer [citation, sic][6]. That case is misleadingly summarized in *Morse* as "a patent for throwing hot air into the furnace instead of cold, and thereby increasing the intensity of the heat, was a patent for a principle, and that a principle was not patentable." It becomes clear, from the portion of the case reproduced at the cite given in the footnote, that the *Morse* court did not notice that the *Neilson* court actually said "we think that the plaintiff does not merely claim a principle, but a machine embodying a principle, and a very valuable one," raising the specter of an entire body of law based on a misquote. The principle might be that heat would warm something, but that did not mean that throwing hot air into a furnace would be a principle.

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[5] *O'Reilly v. Morse*, 56 U.S. (15 How.) 62 (1853)

[6] *Neilson v. Harford*, 151 Eng. Rep. 1266, 8 M. & W. 806, Web. Pat. Cases 295 (1841) Citation cribbed from, and copy to be found at R.H. Stern, "Computer Law 484: Cases and MaterialsChapter 7: Patent Protection of Software: Introduction to Software Patent Cases *http://docs.law.gwu.edu/facweb/claw/ch7.htm* (giving the citation:.)

Moreover, under modern U.S. patent law, the limitation of throwing hot air into a furnace would even more clearly be considered a process step. This step might be invalid as non-novel under 35 U.S.C. 102 or obvious under 35 U.S.C. 103, but 35 U.S.C. 101 as it now exists includes processes[7] within patentable subject matter. 35 U.S.C. 101 was not extant at the time of the *Morse* case[8].

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[7] As did the later case of *Cochrane v. Deener*, 94 U.S. 780 (1877)

[8] *Diamond V. Diehr*, 450 U.S. 175, 182 (1981) explains this history as follows:

> The Patent Act of 1793 defined statutory subject matter as "any new and useful art, machine, manufacture or composition of matter, or any new or useful improvement [thereof]." Act of Feb. 21, 1793, ch. 11, 1, 1 Stat. 318. Not until the patent laws were recodified in 1952 did Congress replace the word "art" with the word "process." It is that latter word which we confront today, and in order to determine its meaning we may not be unmindful of the Committee Reports accompanying the 1952 Act which inform us that Congress intended statutory subject matter to "include anything under the sun that is made by man." S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H. R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952).

The *Morse* case, mischaracterizing *Neilson*, disallowed a claim to ***the use*** of an electromagnetic signal, to wit

> the use of the motive power of the electric or galvanic current, which I call electromagnetism, however developed, for making or printing intelligible characters, signs or letters at any distances, being a new application of that power

on the ground that this claim recited a "principle." In fact, this was a process claim just as the claim in the *Neilson* case was, because the claim was for *the use* of electric or galvanic current, not any principle of such current and not for the current itself. [9]

The *Morse* Court went on to expound, in what is clearly erroneous *obiter dicta*, that "the court, it appears, would have held his patent to be void because the discovery of a principle in natural philosophy or physical science is not patentable." 56 U. S. at 116. In fact, no such principle of natural philosophy or physical science was actually before either court. In each case, what was before the courts were specific processes – not "principles." Both involved specific interaction with physical phenomena.

Parker v. Flook[10] included the following quote,

> "'A principle, in the abstract, is a fundamental truth; an original cause; a

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[9] One can see why there might be an obviousness question in the British case, as everyone knows that blowing hot air warms things up, and presumably people knew that back then as well.

[10] *Parker v. Flook*, 437 U.S. 584, 589, 198 USPQ 193, 197 (1978)

> motive; these cannot be patented, as no one can claim in either of them an exclusive right.' Le Roy v. Tatham, [55 U.S.] 14 How. 156, 175 [(1852)][11]. Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work." [citation to *Benson*]
>
>> The line between a patentable "process" and an unpatentable "principle" does not always shimmer with clarity. Both are "**conception[s] of the mind** [emphasis added], seen only by [their] effects when being executed or performed."[12].

The reasoning in this quotation is another example of why the current petition should be granted for clarification. How is throwing hot air into a furnace a conception of the mind? How is using an electric current a conception of the mind? Unless the observer is hallucinating, these process steps are no more conceptions of the mind than an apparatus limitation. It is not that the line between "principle" and "process" lacks clarity, but rather that the earlier Court was simply wrong in denominating as "principle" the recitation before it.

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[11] In this case, the dispute centered on whether a process/principle was claimed or rather a mechanical device was claimed. The majority interpreted the claim as related to the mechanical device, so that the issue of patentable subject matter was not pertinent to the holding.

[12] citing *Tilghman v. Proctor*, 102 U.S. 707, 728 (1888). That case mentioned the idea that a process step is a conception of the mind. It is difficult to understand why the court makes this statement. If one watches an action and sees its effect, how is that a conception of the mind any more than if one watches a stationary object? There is something distressingly reminiscent here of the sufferer from obsessive compulsive disorder (OCD), who must keep checking the front door of his home dozens of times in succession in order to verify that it is still locked – because of a lack of confidence in the reality of his memory.

Even the *Parker v. Flook* recitations, which are the most abstract of any of the claims in this line of Supreme Court cases, do not truly represent a principle or theoretical mathematics. The updating of an alarm limit is a process step with a commercial context, not a pure principle.

The non-patentability of processes having been eliminated both in *Cochrane* and in the current statute, 35 U.S.C. 101, *Morse* and its progeny, are no longer relevant precedents, despite later attempts to reconcile them. Moreover, the statements they made about patentability of "principle" were always *dicta* and should never have been taken as law.

Gottshalk v. Benson[13]

This seminal case in the field of patentable subject matter was decided with an opinion written by Justice Douglas. When the undersigned was first learning about patent law, she heard patent attorneys sniping rather cynically about Justice Douglas, opining that the approach of Justice Douglas towards patents was "The only valid patent is one that has not been reviewed by this court."

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[13] *Gottshalk v. Benson*, 409 U.S. 63, 172 U.S.P.Q. (BNA) 673, (1972)

Perhaps attorneys did not say so in court papers, but they said so to each other.

The *Benson* case contains a number of statements that invite clarification or repudiation.

Anxiety about the idea of patent monopoly manifests, e.g.

> "The end use may (1) vary from the operation of a train to verification of drivers' licenses to researching the law books for precedents and (2) be performed through any existing machinery or future-devised machinery or without any apparatus..." 408 U.S. at 68

Some of this language seems to contradict the opinion's later conclusion that the algorithm had no practical application outside a digital computer.

Additionally, the anxiety expressed here about breadth of claims really has nothing to do with subject matter. If one imagines hypothetically the first inventor of the carpentry nail, for instance, such an inventor could get a patent that would cover a nail, whether that nail were to be used in constructing a house, constructing a boat, scratching the surface of a soft material, or cleaning dirt out of a crevice. This is the nature of a patent, to give the inventor broad scope of protection – and, yet, if one were to apply the reasoning of the above paragraph, one might strike down a patent on such an original mechanical device out of fear of its scope. This would defeat the whole purpose of the patent law.

Another statement in *Benson* is "A digital computer, as distinguished from an analog computer, is that which operates on data expressed in digits, solving a problem by doing arithmetic as a person would do it by head and hand." 409 U.S. at 65.[14] Perhaps some computer scientists thought this was true at the time, but experts in artificial intelligence and neurology no longer believe that computers think like people, at least when using the type of program that was at issue in this case[15]. People may have in their heads some illusion that they are thinking the way that computers process data, but this is not at all a complete explanation of the mysterious workings of the human brain.

Another statement from *Benson* is:

> We have, however, made clear from the start that we deal with a program only for digital computers... The mathematical formula involved here has no substantial

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[14] The aspect of computer software that looks like mathematics, namely its source code, belies the fact that upon compilation and execution that software actually becomes a configuration of a hardware device. see e.g. "Dissent of Commissioner Hersey" to the report of the National Commission on Ne Technological Uses of Copyrighted Works" at Ch. 3 (CONTU) (1978) http://digital-law-online.info/CONTU/contu14.html.

[15] *cf* M. Minski, "Why People Think Computers Can't", (MIT, Cambridge, 7/6/2005)) *http://aleph0.clarku.edu/~jbreecher/public/2005_Can_Computers_Think/Minsky-WhyPeopleThinkComputersCant.pdf* (Describing how early computer programs were quite different from human thought and how researchers are trying to make them closer); J. Bryner, "Greatest Mysteries: How Does the Brain Work?" (Live Science, Au., 2, 2007) *http://www.livescience.com/strangenews/070802_gm_brain.html* (explaining that scientists still do not know how the brain works, because of the complexity of neurons, so it would be difficult to conclude that binary electronic circuits such as are found in a computer actually work "like" the brain)

> practical application except in connection with a digital computer, which means that if the judgment below is affirmed, the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself. 409 U.S. 71-72

These assertions recognize that the invention can only be practically used in a computer and then jump to the conclusion that the entire algorithm is pre-empted. This reasoning, operating in conjunction with the belief stated earlier that computers think like people, gives rise to the disturbing implication that software related inventions include human thought, "pre-empting the entire algorithm" — that if computers think like people, then a claim reading on a computer processing reads on a person thinking. Such a leap of logic would be a clear fallacy. If one starts from a premise that an airplane flies like a bird, one should not therefore conclude that a claim reading on an airplane flying would read on a bird flying.

Moreover, there remains the inconsistency between the one statement saying that the claim reads on a person and the other statement that says the reasoning is motivated by the fact that the algorithm has no substantial application outside a computer. Indeed, no art having apparently been cited, it would appear that no one was motivated to attempt this rather cumbersome representation of decimal numbers prior to the arrival of computer storage with its binary nature.

Another sub-optimal aspect of this opinion is a failure to make a distinction between two very different claims. Claim 13[16] could conceivably have read on a human working with head and hand. Claim 8[17], on the other hand, recited the use of a

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[16] "A data processing method for converting binary coded decimal number representations into binary number representations comprising the steps of—

"(1) testing each binary digit position *i* , beginning with the least significant binary digit position, of the most significant decimal digit representation for a binary '0' or a binary '1';

"(2) if a binary '0' is detected, repeating step (1) for the next least significant binary digit position of said most significant decimal digit representation;

"(3) if a binary '1' is detected, adding a binary '1'at the (i+1)th and (i+3)th least significant binary digit positions of the next lesser significant decimal digit representation, and repeating step (1) for the next least significant binary digit position of said most significant decimal digit representation;

"(4) upon exhausting the binary digit positions of said most significant decimal digit representation, repeating steps (1) through (3) for the next lesser significant decimal digit representation as modified by the previous execution of steps (1) through (3); and

"(5) repeating steps (1) through (4) until the second least significant decimal digit representation has been so processed." 409 U.S. at 74

[17] "The method of converting signals from binary coded decimal form into binary which comprises the steps of—

"(1) storing the binary coded decimal signals in a reentrant shift register,

"(2) shifting the signals to the right by at least three places, until there is a binary '1' in the second position of said register,

"(3) masking out said binary '1' in said second position of said register,

"(4) adding a binary '1' to the first position of said register,

"(5) shifting the signals to the left by two positions,

"(6) adding a '1' to said first position, and shift register. A shift register is a piece of electronic equipment that can only be used with other electronic equipment, such as sources of power, electronic data signals, and clock signals. A shift register absolutely and categorically cannot be used by a human's naked hand. This is physically impossible. The failure of *Benson*'s insufficiently considered opinion to recognize the distinction between these two claims has given rise to much later confusion.

There seems to be a prejudice against electronic devices in both *Benson* and *Morse*. Patent attorneys, with their scientific training, have studied Newtonian mechanics[18] together with Maxwell's Equations[19] regarding electricity and magnetism in

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"(7) shifting the signals to the right by at least three positions in preparation for a succeeding binary '1' in the second position of said register." 409 U.S. at 73-74

[18] *see, e.g.* I. Newton, *De motu corporum in gyrum* (1684); I. Newton, I Newton, *Philosophiae Naturalis Principia Mathematica* (1687)

[19] In electromagnetism, Maxwell's equations are a set of four partial differential equations that describe the properties of the electric and magnetic fields and relate them to their sources, charge density and current density. These equations are used to show that light is an electromagnetic wave. Individually, the equations are known as Gauss's law, Gauss's law for magnetism, Faraday's law of induction, and Ampère's law with Maxwell's correction.

These four equations, together with the Lorentz force law are the complete set of laws of classical electromagnetism. The Lorentz force law itself was actually derived by Maxwell under the name of "Equation for Electromotive Force" and was one of an earlier set of eight Maxwell's equations. "Maxwell's the same physics courses with the same physics professors. They have seen, in quantum mechanics, how subatomic wave/particles — surrounded mostly by empty space — cooperate to create classical mechanics, electricity, magnetism, and radiation — allowing one form of physical phenomenon to be transformed into another: matter into energy and energy into matter[20]. Those thus trained have no philosophical rubric with which to distinguish electrical and mechanical devices one from the other logically, rendering the distinctions between the two categories from the point of view of patentable subject matter unjustifiable.

In re Nuijten

In *In re Nuijten,*[21] the Federal Circuit spoke of some of these physics-related issues when they said, "Nuijten and the PTO agree that the claims include physical but transitory forms of signal transmission such as radio broadcasts, electrical signals through a wire, and light pulses through a fiber-optic cable" and "We recognize the wave-particle duality as applied to electromagnetic energy. However, the fact

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equations,"
http://en.wikipedia.org/wiki/Maxwell%27s_equations
(18 February 2009, at 01:59)

[20] In the immortal prose of Albert Einstein E=mc^2

[21] *In re Nuijten*, 500 F.3d 1346; 2007 U.S. App. LEXIS 22426; 84 U.S.P.Q.2D (BNA) 1495, September 20, 2007, Decided, Rehearing denied by, Rehearing, en banc, denied by *In re Petrus A.C.M. Nuijten*, 515 F.3d 1361, 2008 U.S. App. LEXIS 2965 (Fed. Cir., 2008)US Supreme Court certiorari denied by *Nuijten v. Dudas*, 2008 U.S. LEXIS 6858 (U.S., Oct. 6, 2008)

that photons traveling at or near the speed of light behave in some ways like particles does not make them tangible articles."[22]

This case, despite recognizing that signals are physical, held signals too transitory to be patentable.

But why should the transitory nature of a human creation be determinative? Everything that man creates is transitory when considered with the age of the universe[23]. Even such durable creations as the Sphinx in Egypt are gradually deteriorating into dust.[24] It is only a question of how long such creations exist. Any attempt for a Court to legislate some definite boundary for how long something must endure in order to be patentable, is doomed to result in more confusion and litigation. Also, it is difficult to imagine a mechanical invention being considered non-patentable merely because of short duration. The *Nuijten* case essentially continues a discomfort with inventions relating to electro-magnetic phenomena, just like *Morse* and *Benson*. This discomfort gives rise to language that makes no sense and has lead to the extensive litigation in this area of the law.

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[22] Ibid n. 8

[23] At least as that age is calculated by scientists, apologies to those who hold to the literal truth of certain religious texts.

[24] J. Levin, "International Symposium on the Great Sphinx," Newsletter 7.2 (1992) *http://www.getty.edu/conservation/publications/newsletters/7_2/sphinx.html*

"Laws" of nature[25]

Both *Diamond v. Diehr* 450 U.S. 175 (1981) and *Parker v. Flook*, 348 U.S.. 193, 198 (1978) misquote *Benson* as saying that a "law of nature" is not patentable, when in fact the *Benson* case only refers to "phenomena of nature." Moreover, these statements about laws or phenomena of nature were *dicta* in all those cases, as no question regarding that sort of subject matter was before the court. For instance, the use of electric current per to transmit letters per *Morse* or the calculations of alarm limits per *Parker v. Flook* do not occur in nature, despite all the talk in the latter opinion that might lead one to suppose the contrary. Nevertheless, the MPEP, and Examiners who follow it have dutifully cited "law of nature" as unpatentable subject matter. *Dicta* regarding this area should be repudiated until a case that is actually in that subject matter arises.

The Court should recognize that "laws" of nature are not the same as "phenomena" of nature. A phenomenon of nature is something that existed before a human discovered it. A "law" of nature is a model, created by a human, to describe natural phenomena. The "law" is therefore something created by "man" and therefore could potentially be patentable.

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[25] MPEP 2106 IV. C. Some other cases about "laws of nature" *The Telephone Cases*, 126 U.S. 1, 532 *et seq.* (1888) (referring to this concept, but finding that the claimed subject matter was patentable); *DeForest Radio Co. v. General Electric Co.*, 283 U.S. 664, 684 (1931) (saying that the concept was not necessary to a decision in that case, however); *Mackay Radio & Telegraph Co. v. Radio Corp. of America*, 306 U.S. 86, 94 (1939) (decided on other grounds); *Funk_Brothers Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127 (1948) (Douglas opinion: invalidating a patent apparently as inherent in or obvious over nature, not explicitly as a "law" of nature)

Physics, and many other academic disciplines, involve the use of mathematics to "model" experimental data.[26]

Many people seem to think that these mathematical models reflect some kind of deep, possibly divine, natural truth. This is not so.

In order to illustrate this point, one can consider the simplest of mathematical models, one that appears whenever a child is taught to count. The teacher holds up a hand — fingers and thumb extended — and starts pointing to the digits of her hand. She says out loud: "One, two, three, four, five." This scene is repeated over and over in family after family, classroom after classroom, country after country, language after language. So common is it that one might suppose it to be some sort of "law of nature" that the hand has five fingers.

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[26] A **mathematical model** uses mathematical language to describe a system. Mathematical models are used not only in the natural sciences and engineering disciplines (such as physics, biology, earth science, meteorology, and electrical engineering) but also in the social sciences (such as economics, psychology, sociology and political science); physicists, engineers, computer scientists, and economists use mathematical models most extensively.

[citation deleted] defined a *mathematical model* as 'a representation of the essential aspects of an existing system (or a system to be constructed) which presents knowledge of that system in usable form' "Mathematical Model". *http://en.wikipedia.org/wiki/Mathematical_model* (Version of Jan. 19, 2009)

There is no such "law." The perception of repetitive groupings of "five fingers" is a creature of human mental processes. One could perfectly well look at it some other way – even though that might not be the "normal" thing to do.

For instance, if the undersigned looks at her index finger, she sees that it is slightly crooked. It is crooked in the same way that her mother's index finger was crooked. It is her mother's finger, in some sense, though with new sworls capable of generating new prints. Why would one group this finger with the other fingers? Why would one think of one set of fingers as being similar to the fingers of people who do not have the same bone structure or sworls? Why do people choose to group the thumb together with the other fingers and call them five members of a single group?

The statement "a normal human hand has five fingers" is a mathematical model of experimental observations of physical phenomena. This model stems from projecting human thought onto the universe.

All mathematical models, like the equation in *Parker v. Flook* are like this. They involve trying to cram observed data into a reproducible and useful form, a form that will allow engineers and scientists to make useful predictions about the behavior of physical phenomena – a grouping of data into useful categories – not unlike the way a legal secretary organizes legal records into a file.

When Isaac Newton devised his theory of mechanics or when Albert Einstein devised his theory of relativity that modified Newtonian mechanics, neither man discovered a "law" or phenomenon of nature. They did not suddenly develop clairvoyance into the mind of God. They organized information in a new way so as to predict other information[27]. These theories were, therefore, not unlike a new type of filing cabinet – a useful way of arranging known data in a more compact space.

Scientists such as Newton, Maxwell, and Einstein were in fact great inventors of exceedingly useful mathematical models. A device that would use such a model would be a manufacture. A process that used such a model would be a process. Both could be useful. A useful mathematical model, claimed so as to include some commercially useful item or behavior, should not automatically be excluded from patent protection merely because the "law" so invented might have broad application.

All that having been said, however, no '"law" of nature appears before the Court at this juncture. The recitations of the representative claim,[28] present

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[27] Such as, in the case of Newton, remarkable improvements in the aiming of canons.

[28] to wit

> A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:
>
> (a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer;
>
> (b) identifying market participants for said commodity having a counter-risk position to said consumers; and
>
> (c) initiating a series of transactions between said commodity provider and said market participants at a

no "law" of nature. Nature fails to initiate transactions or identify market participants. If someone can go out into one of our National Parks and identify wild creatures doing something that might be construed as infringing these claims, that would be substantial evidence of anticipation or obviousness, rather than evidence of non-patentable subject matter[29].

Thought and Speech

Language such as "abstract idea," "mental steps," "human cognition" or "speech" also have frequently appeared as describing categories of non-patentable subject matter. Again, though, it is difficult to imagine how this could have been anything other than *dicta*. The mental processes of the solitary philosopher lack commercial value. What motivation would the patent holder have for preventing such activity?[30]

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second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions

[29] Given the broad way that these claims are drafted it seems not entirely inconceivable that a clever biologist might find such a thing, especially if a "fixed rate" were zero, but it does not appear that such a biologist has been dispatched or returned with any relevant evidence.

[30] In *Parker v. Flook*, for instance, as pointed out by the dissent, the calculation of the alarm limit was only motivated by a response to an environment around a catalytic converter that needed to be measured and adjusted for. Absent this commercial environment, no one would have had any motivation to bring the case to the Supreme Court of the United States.

The claims in the present case, though, are not confined to an abstract idea. Initiating transactions is not an abstract idea.

Any such motivation to control ideas or speech would likely be in the domain of civil rights. Protection of civil rights is found in amendments to the constitution that succeeded Art. I, §8 cl.8 of the United States Constitution, the clause that gave rise to patents. These amendments therefore would have superseded the latter to the extent there would be any conflict.

The ACLU amicus brief below[31] takes the position that the claim at hand involves speech. Transactions could be initiated via speech — but the law has always been available to control commercial speech, where that speech affects commerce[32]. If the position of the ACLU were to be upheld, then it would be difficult, for instance, to rationalize anti-trust laws prohibiting certain types of contractual arrangements, because such contractual arrangements would be "speech." The concern of the ACLU is misplaced.

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[31] see e.g. *http://www.finnegan.com/amicusbriefsfiledforinrebilski/*

[32] It is beyond the scope of this brief to foray extensively into Constitutional law.

Business methods

State Street Bank[33]

This case caused quite a stir in the patent law by declaring business methods to be patentable subject matter. The statements about patentability of business methods absent use of a computer were *dicta* in this case, because the representative claim recited a business method implemented on a data processing system, with each element prefaced with a "means for" clause that was read by the court on a specific part of a computer system. The fuzzing of the distinction between abstractly recited business methods and the computer based methods in *State Street Bank* is similar to the fuzzing of the distinction between claims 8 and 13 in *Benson*.

Despite being *dicta*, *State Street Bank*'s statements about the patentability of disembodied business methods raised sufficient concern that Congress felt compelled to pass legislation to protect people who had engaged in business methods for many years under the impression that such methods were not patentable.[34] Seminars were held nationwide for patent attorneys declaring that now a whole new category of patents would be forthcoming.[35] The suite has shown this flurry of activity to be much ado about nothing.

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[33] *State St. Bank & Trust Co. v. Signature Fin. Group*, 96-1327 , 149 F.3d 1368; 1998 U.S. App. LEXIS 16869; 47 U.S.P.Q.2D (BNA) 1596, (Fed. Cir 1998) , *cert. den.* 1999 U.S. LEXIS 493 (1999)

[34] 35 U.S.C. 273 (passed in 1999)

[35] *see e.g. "Patenting the Business Model: Building Fences in Cyberspace" PLI 2000* a seminar attended by the undersigned.

AT&T[36]*,Comiskey*[37]*, and Bilski*[38]

These three cases show a pattern that departs from the broad *dicta* in *State Street Bank.*[39] and that draws the distinction that *Benson* failed to make between claims 8 and 13. This distinction may be characterized as between, a) a claim that has recitations completely devoid of any relationship to any kind of apparatus, with apparatus to include software; and b) a claim that has recitations indicating such a relationship. The latter would fall within the realm of patentable subject matter, while the former would not.

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[36] *AT & T Corp. v. Excel Communications Inc*, 172 F.3d 1352, 50 USPQ2d 1447, 1999 U.S. App. LEXIS 7221; 50 U.S.P.Q.2D (BNA) 1447 (Fed. Cir 1999);

[37] *In re Comiskey*, 2009 U.S. App. LEXIS 400, (Fed. Cir. 2009 *en banc*) replaces 499 F. 3d 1365 (Fed. Cir. 2007)

[38] *In re Bilski*, 2007-1130, UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT, 264 Fed. Appx. 896; 2008 U.S. App. LEXIS 3246, (non precedential Fed. Cir. -- February 15, 2008); 545 F.3d 943; 2008 U.S. App. LEXIS 22479; 2008-2 U.S. Tax Cas. (CCH) P50,621, October 30, 2008, Decided, Petition for certiorari filed at, 01/28/2009 (the case that is the subject of the present petition.

[39] This trend renders pitiful and futile all that frantic activity by practitioners, Congress, and the courts in response to the earlier case. When it is considered how many people hours were wasted in this effort, one must conclude that courts should reiterate their past commitment to caution against *dicta*.

In *AT&T*[40] the claim[41] was found to be patentable, due to sufficient apparatus limitations. While this claim was framed to be limited to a telecommunications system, message records, and facilities of interchange carriers, it has a great deal in common with the claim in *Bilski*. This commonality stems from the fact that the transactions set forth in *Bilski*'s claims inherently are the sort that must be communicated over some telecommunications system at some point, even though the telecommunications system is not recited. The absence of explicit recitation of such communication, though, apparently led to the conclusion of unpatentability below.

The court in *Comiskey* drew a distinction between business method claims that recited "modules," thereby invoking a software embodiment, and claims that did not contain any kind of limitation relating to an embodiment. The former were considered potentially patentable, while the latter were not.

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[40] 172 F.3d 1352, 50 USPQ2d 1447 (Fed. Cir 1999)

[41] A method for use in a telecommunications system in which interexchange calls initiated by each subscriber are automatically routed over the facilities of a particular one of a plurality of interexchange carriers associated with that subscriber, said method comprising the steps of:

> generating a message record for an interexchange call between an originating subscriber and a terminating subscriber, and including, in said message record, a primary interexchange carrier (PIC) indicator having a value which is a function of whether or not the interexchange carrier associated with said terminating subscriber is a predetermined one of said interexchange carriers
> 172 F.3d at 1354, 50 USPQ2d at 1449

The court below has called this the "machine or transformation" test.

The claims under scrutiny with present petition, like the ones in *Comiskey,* relate to rejected claims that contain no hint of a recitation of any such embodiment.

While the distinction drawn in these three cases is arguably a clear, bright line that patent attorneys can understand and live by, this line is notably contrary to *Benson*. The opinion below makes an attempt to reconcile with *Benson* that only highlights the internal inconsistency in that opinion.

> However, in Benson, the limitations tying the process to a computer were not actually limiting because the fundamental principle at issue, a particular algorithm, had no utility other than operating on a digital computer.... Thus, the claim's tie to a digital computer did not reduce the pre-emptive footprint of the claim since all uses of the algorithm were still covered by the claim[42].

This ignores the implication earlier in the *Benson* case that the claims read on a person "with head and hand." Moreover, the conclusion, *i.e.* that the narrowness of the algorithm — having no substantial use outside a computer — would make it less patentable than an algorithm that had uses both inside and outside a computer makes no sense.

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[42] slip opinion at p. 13

More about the present case

Some have argued[43] that the claims of the patent application on petition here are more susceptible of innocent infringement by consumers than claims with apparatus limitations. In this respect, though, the present claims are no different from those of any other process claim[44].

Moreover, patent litigation is extremely costly[45] and therefore is unlikely to be undertaken against the casual or occasional infringer, especially in the case of the present claims, which seem to be much more valuable in the case of large markets with many transactions.

The claims here relate to real, tangible commercial transactions that could have substantial impact on real markets, indeed on the global economy. There is nothing abstract, theoretical, natural, or principled about these claims. The worry, expressed in various cases over several centuries, about subject matter that cannot be packed in a box or struck with a hammer is irrational. This is the information age[46], a time when increasingly life is conducted through the Internet. Businesses in the financial industry regularly hire people of strong scientific and technical background to implement competitive financial systems.[47] The same economic arguments that justify the patent law in protecting those who hire such highly trained people to engage in research in conventional sectors apply to the financial sector. The Court should hear *Bilski* and repudiate all this past apprehension, lest patent law become irrelevant to the current economy. The transactions to be initiated here ought to be recognized as things of human "manufacture" as required by 35 U.S.C. 101.

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[43] e.g. the Hollaar amicus brief below. All amicus briefs below are currently available at Petitioner's website at *http://www.finnegan.com/amicusbriefsfiledforinrebilski/*.

[44] for more about innocent infringement and marking process patents see e.g. S. P. Pan, "The Intersection Between Damages Recovery Under the Patent Marking Statute and Prosecution Practice", (Sughrue Mion, PLLC 2005) *http://www.aipla.org/Content/ContentGroups/Speaker_Papers/Road_Show_Papers/200512/Patent_Prosecution/PanPaper.pdf* p. 3 (citing *American Medical Systems Inc. v. Medical Engineering* Corp., 26 USPQ2d 1081, 1095 (E.D. Wisc. 1992) citing *Bandag, Inc. v. Gerrard Tire Co.*, Inc. 217 USPQ 977 (Fed. Cir. 1983).)

[45] L.H. Pretty, "PATENT LITIGATION: IS IT BROKEN AND CAN WE FIX IT?", The 22nd Annual Intellectual Property Law Conference (2007, Arlington VA) *http://www.abanet.org/intelprop/spring2007/coursematerials/pdf/01%20Pretty%20Paper.pdf* p.3 (citing costs in the seven figure range)

CONCLUSION

The entire field of law of patentable subject matter needs to be reviewed and clarified; errors of reasoning eliminated; inconsistencies resolved; and *dicta* identified as such. Anxiety about certain fields of technology must be repudiated so that patent law can be relevant to the areas where commercially valuable innovation currently occurs and not become a dusty relic of the past.

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[46] *see e.g.* "Information Age", 2/23/09 *http://en.wikipedia.org/wiki/Information_Age*

[47] J. Ouellette, "Physicists Graduate from Wall Street," 9 The Industrial Physicist (American Institute of Physics Dec. 1999) *http://www.tipmagazine.com/tip/INPHFA/vol-5/iss-6/p9.pdf*

Respectfully submitted,

Anne E. Barschall
pro se
80 Benedict Ave
Tarrytown NY 10591
914-332-1019

AMICUS
CURIAE
BRIEF

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No. 08-0964

IN THE

Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

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Respondent,

On Petition for Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF *AMICUS CURIAE* BORLAND SOFTWARE CORPORATION IN SUPPORT OF PETITIONER

SCOTT S. KOKKA*
*Counsel of Record
KENNETH R. BACKUS, JR.
KOKKA & BACKUS, PC
200 Page Mill Road
Suite 103
Palo Alto, CA 94306-2022
(650) 566-9912

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SCOTT S. KOKKA*
*Counsel of Record
KENNETH R. BACKUS, JR.
KOKKA & BACKUS, PC
200 Page Mill Road
Suite 103
Palo Alto, CA 94306-2022
(650) 566-9912

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INTEREST OF THE *AMICUS CURIAE*

The *Amicus Curiae,* Borland Software Corporation of Austin, Texas ("Borland") is one of the world's oldest and enduring software companies having introduced numerous innovative products. Borland produces enterprise software development applications and platforms for Application Lifecycle Management. Founded in 1981, Borland has made substantial global investments in the development of products for the software industry, and pioneered the emergence of new technologies that have enabled software products ranging from compilers, object-oriented programming languages, graphical user interfaces, web services, enterprise integrated development solutions, and development software for use across a wide variety of industries.[1]

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[1] The parties have consented to the filing of this brief. No counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than amicus curiae, its members, or its counsel made a monetary contribution the preparation and submission of this brief. Counsel of record for the parties received notice of the *Amicus Curiae*'s intent to file this brief and written consent was granted in accordance with Supreme Court Rule 37.2(a).

QUESTIONS PRESENTED

Whether the Court of Appeals for the Federal Circuit erred by holding that a process-related invention, in order to be patent-eligible under 35 U.S.C. §101, must be tied to a particular machine or apparatus or transform an article, which is representative of a physical object or substance, to a different state or thing.

Whether the Court of Appeals for the Federal Circuit has narrowed the scope of patent-eligible subject matter in process-related inventions by holding that the method of doing business is unpatentable, despite 35 U.S.C. §273 and Congress' intent to create a category of process-related patent eligible subject matter under the Patent Act of 1952.

SUMMARY OF THE ARGUMENT

The determination of patent-eligible subject matter for process-related inventions has been brought before this Court in the present case, *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008). Under 35 U.S.C. 101, the determination of patent-eligible subject matter in process-related inventions is subject to the purported "machine-or-transformation" test, as last discussed by this Court in *Diamond v. Diehr*, 450 U.S. 175 (1981). However, the Federal Circuit's adoption of the "machine-or-transformation" test is erroneous because this Court has set forth factors beyond merely the test that may be used to determine patent eligibility under 35 U.S.C. §101.

The Federal Circuit has adopted a test for determining patent eligibility for process claims, misinterpreting rationale set forth in *Diehr* that is not supported by this Court's precedents. The interpretation of the cases upon which the test has been developed is inconsistent with this Court's opinions. In particular, the Federal Circuit's machine-or-transformation test is incongruent with *Diehr*. The vagueness of the machine-or-transformation test requires this Court to clarify the standards by which to determine patent eligibility. The Federal Circuit must adopt standards for determining patent-eligible subject matter without disregarding precedent established by this Court.

The present case is an opportunity for the Court to establish clearly the test or manner in which patent-eligibility is determined for process-related inventions. Industries dependent upon the use of the Internet, enterprise software, user-generated content, massively multi-player online virtual games, data network, network security software, or other software-related technologies may be jeopardized if the Federal Circuit's opinion is permitted to persist. The restrictive nature of the "machine-or-transformation" test, as set forth by the Federal Circuit improperly suggests that statutory categories of patent-eligible subject matter are implicated when attempting to patent a process-related claim, thus running afoul of Congress' intent to establish four distinct classes of patentable subject matter. The standard for determining patentability under 35 U.S.C. §101 should not restrict incentives to research, develop, or invest in software or emerging technologies, which are an increasingly larger part of our society and economy. However, if global economic and political policy considerations are ignored, in addition to this Court's precedents, the present Amicus Curiae, other software, and information technology-based organizations will face increased costs, barriers to investment, reduced incentives to innovation, and competitive setbacks resulting from a weakened patent system. Congress' intent in enacting the Patent Act and this Court's prior case law must be followed when conducting an inquiry into the patent-eligibility of a process-related claim.

INTRODUCTION

The current state of Federal Circuit case law is confusing, at best, when attempting to determine how and whether a given process is patentable. More specifically, determining the proper tests or factors for establishing patent-eligible subject matter is difficult given the Federal Circuit's recent discarding of previous tests in its discussion of the present case. The need is apparent for this Court to define the proper standard for determining patent-eligible subject matter in process-related inventions, regardless of whether typified as a "business method" or software.

While Supreme Court precedent clearly establishes that the intent of the "machine or transformation" test is to avoid pre-emption of a fundamental principle such as a mathematical algorithm, the Federal Circuit's approach as to the precise contours of how to apply the "machine-or-transformation" test is vague and non-committal, creating uncertainty. This is evident given the broken landscape of discarded precedent from the last 28 years and the Federal Circuit's seeming inability to establish a consistent approach for determining patent-eligible subject matter in process-related inventions. The Federal Circuit is struggling with providing definition to the public as to how it should interpret the "particular machine" portion of the "machine-or-transformation" test in an age of information technology, software, and networked communications.

This Court must clarify the "machine-or-transformation" test to curtail the seemingly perpetual inconsistencies in the jurisprudence of patent eligibility. As articulated by the Federal Circuit, a process claim need only recite a machine for patent eligibility, regardless of whether the machine performs any function. In some situations, the machine is no more than a boat anchor obscuring the recitation of innovative features.

Inventors in the electrical arts are not required to recite another statutory class (e.g., the composition of matter) in apparatus claims, unless the innovation relates to the statutory class. For example, a claim to an inventive semiconductor device need not be required to recite the semiconductor material of which it is composed if the innovation is unrelated to the material. Likewise, inventors in the mechanical arts are not required to recite another statutory class (e.g., the composition of matter) in apparatus claims, unless the innovation relates to the statutory class. For example, a claim to an inventive motor need not be required to recite the metal composition of which it is composed if the innovation is unrelated to the metal. It is time that inventors in the computer arts are unshackled from tying a machine to process claims when the machine contributes nothing to the inventive features or novelty. The present Amicus Curiae urges the Court to establish a reliable approach for determining patent-eligible process-related inventions.

ARGUMENT

1. THE FEDERAL CIRCUIT HAS ADOPTED A TEST FOR DETERMINING PATENT ELIGIBILITY FOR PROCESSES NOT ARTICULATED BY THIS COURT

A. Supreme Court Precedent for Determining Eligibility under § 101.

An invention is eligible for patent if the subject matter is "any new and useful process, machine, manufacture, or composition of matter," 35 U.S.C. § 101 (1952), each of which is a distinct and independent statutory class. In one of the last two cases in which this Court addressed patentability under § 101, it noted that "Congress plainly contemplated that the patent laws would be given wide scope." *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980). And it recognized that Congress intended that the classifications of statutory subject matter to 'include *anything* under the sun that is *made by man*.'" (emphasis added) *Id.* at 309 (citations omitted). Congress instructs us further that when determining whether an invention is patentable, § 101 should be read expansively so as not to impair or exclude the development and protection of emerging and unforeseen technologies. *Id.* at 316 ("Congress employed broad general language in drafting § 101 precisely because such inventions are often unforeseeable."). While the gamut of eligible subject matter is extensive, there are exceptions under which certain subject matter is ineligible for patent. *Id.* at 309 ("The laws of nature, physical phenomena, and abstract ideas have been held not patentable." (citations omitted)).

Following *Chakrabarty*, *Diehr* articulated a schema by which process claims using an algorithm are evaluated to determine eligibility under § 101. In *Diehr*, the Court found patentable a process using a software algorithm to cure rubber. First, the Court reiterated that statutory subject matter includes "*anything* under the sun that is *made by man*," 450 U.S. at 182 (emphasis added). In *Diehr*, there was no argument that the claimed process was not man-made. Second, the Court scrutinized the claimed process to determine whether the process included "laws of nature, natural phenomena, [or] abstract ideas," which are excluded from patent protection. *Id.* at 185. "[W]hen a claim recites a mathematical formula (or scientific principle or phenomenon of nature), *an inquiry must be made* into whether the claim is seeking patent protection for that formula in the abstract. A mathematical formula as such is not accorded the protection of our patent laws[.]" (emphasis added) *Id.* at 191. The Court concluded in *Diehr* that the application or use of "a mathematical formula, computer program, or digital computer" does not convert an otherwise statutory claim into a nonstatutory claim, *See id.* at 187, so long as such a mathematical formula, computer program, or digital computer does not "pre-empt the use of" an equation or abstract idea. *See generally id.* For nearly thirty years, *Diehr* has guided patent eligibility jurisprudence, which the Federal Circuit has abandoned abruptly in favor of its "machine-or-transformation" test.

B. The Foundation of the Machine-or-Transformation Test May Be Suspect.

1. The Machine-or-Transformation Test is Not Well Supported by Case Law.

The Federal Circuit has crafted a new test: "[a] claimed process is surely patent-eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing." *In re Bilski*, 545 F.3d 943, 951 (Fed. Cir. 2008) (en banc). The kernel of the machine-or-transformation test is rooted in *Gottschalk v. Benson*, 409 U.S. 63 (1972). After summarizing prior precedents involving processes for 19th century technologies, this Court stated that "[i]t is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing.'" *Id.* at 71. The majority of the Federal Circuit seized this statement for use as its machine-or-transformation test. Attribution for the source of this statement is absent in Benson, and while it originates partially from *Cochrane v. Deener*, 94 U.S. 780 (1877), the associated language in *Cochrane* recites a definition of "a process . . . as an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing," *Id.* at 787-788, rather than the language that now constitutes the machine-or-transformation test. The Court in *Benson* rejected that statement: "*We do not hold* that no process patent could ever qualify if it did not meet the requirements of our prior precedents." (emphasis added) 409 U.S. at 71. The Court again rejected this statement in *Parker v. Flook*, 437 U.S. 584, 589 n.9 (1978) ("As in *Benson*, we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents").

The Federal Circuit misconstrues the absence of an explicit repudiation for the statement made in *Benson* and *Flook* as somehow "reaffirm[ing] machine-or-transformation test," *In re Bilski*, 545 F.3d at 956. Further, the Federal Circuit incorrectly reads that *Diehr* recites the "transformation and reduction" passage as an endorsement of the machine-or-transformation test. *See Diehr*, 450 U.S. at 184 ("Transformation and reduction . . . is the clue to the patentability of a process claim that does not include particular machines."). Rather, *Diehr* recites the passage as a "clue" or a "factor" for an "analysis of the eligibility of a claim of patent protection for a 'process' . . . ." *Id.*

2. The Machine-or-Transformation Test is Incongruent with Patent Eligibility set forth in Diehr.

The machine-or-transformation test omits analysis necessary to determine whether a process claim forecloses the application or use of a law of nature, physical phenomena, or abstract idea by others. In *Diehr*, the Court examined whether the use of an equation would pre-empt its use by others and reasoned that the equation did not "foreclose from others the use of that equation in conjunction with all of the other steps . . . ." *Diehr*, 450 U.S. at 187. The pre-emption analysis in *Diehr* explored whether the claims were otherwise limited by the other steps. *See generally id.* By contrast, the machine-or-transformation test does not require a pre-emption analysis, but rather it presumes an abstract idea is ineligible if the test fails. Thus, a process claim that fails the test is deemed—by the mere fact the test failed—to pre-empt and foreclose the application or use of the law of nature, physical phenomena, or abstract idea recited therein. The Federal Circuit acknowledged the pre-emption analysis in *Diehr* but did not include it in its test.

> *Diehr* can be understood to suggest that whether a claim is drawn only to a fundamental principle is essentially an inquiry into the scope of that exclusion; i.e., whether the effect of allowing the claim would be to allow the patentee to pre-empt substantially all uses of that fundamental principle. If so, the claim is not drawn to patent-eligible subject matter.

In re Bilski, 545 F.3d at 956.

In *In re Bilski*, the Federal Circuit evaluated the transformation prong and held that the claimed process "does not transform any article to a different state or thing." *In re Bilski*, 545 F.3d at 963. The Federal Circuit performed no noticeable pre-emption analysis when concluding that "[p]urported transformations or manipulations simply of public or private legal obligations or relationships, business risks, or other such abstractions cannot meet the test because they are not physical objects or substances, and they are not representative of physical objects or substances." *Id.* The test ends here.

The inquiry is different under the guidance of *Diehr.* A court following *Diehr* would first inquire as to whether legal obligations are man-made constructs, followed by examining whether the legal obligations are laws of nature, physical phenomena, or abstract ideas. As these are man-made constructs, they are governed by the laws of man and are not natural phenomena. The court would likely find that legal obligations are abstract ideas. Next, the court ought to determine whether the recited legal obligations would foreclose others from using them. Note that the claim is limited to commodities sold at "a fixed rate," rates based on "historical averages," and legal obligations for options on energy. These do not foreclose the use of "a variable rate," rates based on other than historical averages, and specialized legal obligations that are markedly different than other legal obligations, such as obligations under a mortgage, under an employment agreement, etc. Thus, not *all* uses of the legal obligations of *In re Bilski* appear to be foreclosed. Given the differences between *Diehr* and *In re Bilski,* it is unlikely that the Court in *Diehr* "reaffirmed" the machine-or-transformation test. See *In re Bilski,* 545 F.3d at 956.

2. THE FEDERAL CIRCUIT MUST EMPLOY TESTS TO DETERMINE PATENT-ELIGIBLE SUBJECT MATTER WITHOUT RUNNING AFOUL OF PRECEDENT ESTABLISHED BY THIS COURT

A. *Bilski* is an Opportunity for the Court to Address Whether a Process-Related Invention Seeks to Pre-Empt the Use of a Fundamental Principle Or to Patent an Application Thereof

This Court last addressed the issue of patent eligible subject matter under 35 U.S.C. §101 in *Diehr*, discussing the patentability of a method for curing synthetic rubber including several steps that involved the use of a mathematical formula and a digital computer for determining the length of time needed to cure the rubber. In 1981, the software industries were entering a nascent stage of commercialization and this Court interpreted the Patent Act of 1952 in order to further define patent-eligibility for processes, providing guidance and analysis of its line of cases in *Benson*, *Flook*, *Chakrabarty*, and *Diehr* to these industries.

However, the expansive reading of *Chakrabarty* that patent-eligible subject matter includes "...anything under the sun that is made by man," has limits and this Court has set forth several in various opinions, including those precedents cited herein. Laws of nature, physical phenomena, mental processes, and abstract ideas have been found to be outside the scope of patent-eligible subject matter in order to prevent the preemption of a fundamental principle such as a mathematical equation to cure rubber or conversion of binary-coded decimal numerals to binary numerals.

Conversely, the practical application of fundamental principles may be eligible for patent protection, but the mere addition of post-solution activity or field of use restrictions are not sufficient to gain patentability. *See Flook*, 437 U.S. at 589. In general, software does not seek to pre-empt the use of a fundamental principle. Computer programs are often developed to perform logical groupings of minute tasks or operations into "objects," relying upon the use of higher-level programming languages known as object-oriented languages. Often, computer programs developed using higher generation programming and formatting languages typically do not have the physicality aspects as required by the Federal Circuit in its erroneous opinion. Software has become ubiquitous in society, used in many applications that involve no physical object or substance. Security software may be used in network security to prevent computer programs from causing damage to other computer programs. Telecommunications networking software may be used to manage the distribution of data over a data or voice communication network, routing telephone calls or electronic mail messages that are encoded in digital data. Software development tools, such as those made by the present Amicus Curiae, are used to develop other software, often without anticipation of a specific use case, context, or scenario in mind.

The present case represents an opportunity for the Court to clearly set forth the proper standard for determining patent-eligible subject matter in the category of process or method-related inventions under 35 U.S.C. §101, particularly in light of emerging technologies and the growing industries of software and information technology. Although the Federal Circuit did not provide guidance as to the applicability of its interpretation of the "machine-or-transformation" test to software, *In re Bilski* has had a substantial impact upon these industries. In February of 2009 alone, the Board of Patent Appeals and Interferences applied *In re Bilski* to nine cases, all of which involved software or electronics-related inventions.[2] Despite its distinguishing of software from the method claims in the present case, the Federal Circuit's opinion is being erroneously followed by the Patent and Trademark Office.

Subsequently, the opinion of the Federal Circuit has improperly narrowed the application of the precedent established by this Court in *Diehr*:

> "...even a claim that recites "physical steps" but neither recites a particular machine or apparatus, nor transforms any article into a different state or thing, is not drawn to patent-eligible subject matter. Conversely, a claim that purportedly lacks any "physical steps" but is still tied to a machine or achieves an eligible transformation passes muster under §101."

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[2] Professor Dennis Crouch, *Patentable Subject Matter Redux: Bilski 2009* (March 1, 2009) <http://www.patentlyo.com/patent/2009/03/patentable-subject-matter-redux-bilski-2009.html>

See In re Bilski, 545 F.3d at 961.

Under its interpretation of *Diehr* as the predominant test for determining patent-eligible subject matter, the Federal Circuit has re-introduced the requirement for physicality into patentable subject matter in discord with Supreme Court precedent, thus jeopardizing innovation in fields such as financial services, semiconductor manufacturing, software, and information technology, all of which have created substantial value and economic advantage for the United States. The Court must clarify its previous precedent to avoid damaging industries with interests crucial to the American economy.

B. The Federal Circuit's Recitation of the "Machine-or-Transformation" Test is Incomplete and Guidance from the Court is Sought as to the Interpretation and Scope of the "Machine-or-Transformation" Test

As stated in the majority opinion by the Federal Circuit, "[W]e leave to future cases the elaboration of the precise contours of machine implementation, as well as the answers to particular questions, such as whether or when recitation of a computer suffices to tie a process claim to a particular machine." *See In re Bilski*, 545 F.3d at 962. With only partial application of the "machine-or-transformation" test in *In re Bilski* and no illuminating case law precedent from this Court, guidance is required in order to better clarify the full nature of the "machine-or-transformation" test or a new test altogether.

There is a need for full and proper interpretation of what constitutes a patentable process-related invention.

1. The Restrictive Nature of the "Machine-or-Transformation" Test as Set Forth by the Federal Circuit Improperly Suggests that the Path to Patentability is Achieved by Tying Together Statutory Categories of Subject Matter

In 1793, the first Patent Act was enacted several statutory categories of patent-eligible subject matter were set forth, including "...any new and useful art, machine, manufacture, or composition of matter...." Act of Feb. 21, 1793, ch. 11, §1, 1 Stat. 318. With the adoption of the Patent Act of 1952, "any new and useful art" was amended to "any new and useful process," thus identifying processes or methods as a category of patent-eligible subject matter. This Court's precedents do not provide that the adoption of physical elements into a process-related claim is required for patent-eligibility. Instead a determination of patent-eligibility is based upon whether a patentee seeks to pre-empt the use of a fundamental principle. *See Diehr*, 450 U.S. at 191-192. However, if a claim seeks to patent the application of a fundamental principle, then patentability under, at least, 35 U.S.C. §101, is proper.

As noted in *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948), "[H]e who discovers a hitherto unknown phenomenon of nature has no claim to a monopoly of it which the law recognizes. If there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end." Also, the Court later cited *Benson* to reinforce its point that "[A]lthough we were dealing with a "product" claim in *Funk Bros.*, the same principle applies to a process claim. *See Gottschalk v. Benson*, 409 U.S. 63, 68 (1972). Further, in *Diehr*, this Court reinforced the proposition that "[I]t is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection." *See Diamond v. Diehr*, 450 U.S. 175, 187 (1981). In other words, this Court clearly established that mathematical formula used in process-based applications, without the need for physical structures or elements, were anticipated under the Patent Acts of 1793 and 1952. Still further, under 355 U.S.C. §§273(a)(3) and 273(b)(1), Congress intended that business methods fall under the scope of process-related, patent-eligible subject matter. Neither Congress nor this Court intended that the Patent Act should be interpreted such that patent-eligible processes should require physicality by tying together categories of patent-eligible subject matter, specifically processes to apparatus-type claim limitations.

2. The Test Adopted By the Federal Circuit Does Not Accommodate New or Emerging Technologies

Writing for the majority opinion in *Bilski*, the Federal Circuit invited this Court to address how to determine patent-eligible subject matter for process-related inventions in the context of advance and emerging technologies such as software:

> "Nevertheless, we agree that future developments in technology and the sciences may present difficult challenges to the machine-or-transformation test, just as the widespread use of computers and the advent of the Internet has begun to challenge it in the past decade. Thus, we recognize that the Supreme Court may ultimately decide to alter or perhaps even set aside this test to accommodate emerging technologies. And we certainly do not rule out the possibility that this court may in the future refine or augment the test or how it is applied." *See In re Bilski*, 545 F.3d at 956.

The Federal Circuit reasons that the "machine-or-transformation" test is the definitive test for determining whether a process-related invention is patent-eligible, but then extends its reasoning to suggest that a process must be a physical object or substance or a representative thereof, again implying that physicality is a requirement to fulfilling the test. *See In re Bilski*, 545 F.3d 943, 963-964 (Fed. Cir. 2008). This reasoning appears to preclude technologies such as software. If, as the Federal Circuit stated, the "machine-or-transformation" test is the definitive test for determining patent-eligibility in process-related inventions, then this Court's precedents have been ignored. *See id.* This Court has established that the "transformation" portion of the test is but a "clue" and not the only means for determining patent-eligibility. *See Benson*, 409 U.S. at 69; *See also Diehr*, 450 U.S. at 184. Other considerations and factors must be taken into account. The proper inquiry to be made is that set forth by Justice Rehnquist for the majority in *Diehr*, that "...when a claim recites a mathematical formula (or scientific principle or phenomenon of nature), an inquiry must be made into whether the claim is seeking patent protection for that formula in the abstract." *See Diehr*, 450 U.S. at 191. Technologies such as software suggest that the Court return the jurisprudence governing patent-eligibility to the precedents previously established.

C. Case Law Clearly Signals that Clarification of the Standard Set Forth in *Diehr* 28 Years Ago is Needed

The current state of Federal Circuit case law is confusing, at best, when attempting to determine how and whether a given process is patentable, particularly as related to software. Specifically, determining the proper tests or factors for establishing patent-eligible subject matter is difficult given the Federal Circuit's recent discarding of previous tests in the present case. Numerous previous opinions previously relied upon by the software industry were discarded, including the "Freeman-Walter-Abele" test (i.e., 1) determining whether an algorithm within the meaning set forth in *Benson* was present in the claim and 2) if so, determining whether that algorithm is applied to any manner to physical elements or process steps") and a "useful concrete, and tangible" result is produced. *See In re Bilski*, 545 F.3d at 959-961; *In re Freeman*, 573 F.2d 1237 (CCPA 1978); *In re Walter*, 618 F.2d 758 (CCPA 1980); *In re Abele*, 684 F.2d 902 (CCPA 1982); *AT&T Corp. v. Excel Communications, Inc.* 172 F.3d 1352 (Fed. Cir. 1998); *In re Comiskey*, 499 F.3d 1365 (Fed. Cir. 2007)[3]; *State Street Bank & Trust Co. v. Signature Financial Group*, 149 F.3d 1368 (Fed. Cir. 1998); *In re Alappat*, 33 F.3d 1526, 1543-154 (Fed. Cir. 1994). The Federal Circuit also declined to adopt either a "technological arts" test or a categorical exclusion to software patents, thus implying the patent-eligibility of software and computer programs. *See In re Bilski*, 545 F.3d at 959-961. The lower court's opinion is a call upon this Court to provide clarification on how the "machine or transformation" is to be applied to determine patent-eligible software claims. Further, the Federal Circuit stated that "[W]e also note that the process claim at issue in this appeal is not, in any event, a software claim. Thus, the facts here would be largely unhelpful in illuminating the distinctions between those software claims that are patent-eligible and those that are not." *See In re Bilski*, 545 F. 3d at 961. Despite this statement, the Patent and Trademark has proceeded to mistakenly apply this case to its examination efforts in an apparent effort to stifle the growing backlog of pending patent applications at the Office.[4] The need for this Court to define the proper standard for determining patent-eligible subject matter in process-related inventions is urgent and has been called for over the last four decades. *See In re Bilski*, 545 F. 3d at 956; *see also In the Matter of the Application of Glen F. Chatfield*, 545 F. 2d 152, 161 (CCPA 1976) (Rich, J., dissenting).

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[3] The Federal Circuit on January 13, 2009, *en banc*, affirmed in part, vacated in part, and remanded the subject patent application in *In re Comiskey* to the U.S. Patent and Trademark Office for further examination as to whether patent eligible subject matter was present in claims 17 and 46 and dependent claims 15, 30, 44, and 58 in U.S. Patent Application No. 09/461,742.

While Supreme Court precedent clearly establishes that the intent of the "machine-or-transformation" test is to avoid pre-emption of a fundamental principle, the Federal Circuit's application of these precedents is unclear as to the precise contours of how to apply the test to software-related processes. This is evident given the broken landscape of discarded precedent from the last 28 years and the Federal Circuit's seeming inability to establish a consistent approach for determining patent-eligible subject matter in process-related inventions. The Federal Circuit today is struggling with providing definition to the public as to how it should interpret the "particular machine" portion of the "machine-or-transformation" test in an age of information technology, software, and networked communication: "[W]e leave to future cases the elaboration of the precise contours of machine implementation, as well as the answers to particular questions, such as whether or when recitation of a computer suffices to tie a process claim to a particular machine." *See In re Bilski*, 545 F.3d 943, 962. A reliable approach for determining patent-eligible process-related inventions is required.

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[4] Dennis Crouch, *Patentable Subject Matter Redux: Bilski 2009* (March 1, 2009) <http://www.patentlyo.com/patent/2009/03/patentable-subject-matter-redux-bilski-2009.html>.

3. THE STANDARD FOR DETERMINING PATENTABILITY UNDER 35 U.S.C. §101 SHOULD NOT RESTRICT INCENTIVES TO RESEARCH, DEVELOP, OR INVEST IN SOFTWARE OR EMERGING TECHNOLOGY

The United States exists in a highly competitive global environment in many industries, including software in which it leads the world in terms of market revenues, but also losses due to expropriation and piracy.[5] Under the current interpretation of the "machine-or-transformation" test, the potential for gaining competitive advantage within the software industry is lessened as weakened patent protection for process-related software inventions will deter private and public investment in innovation.

A. Global Economic and Political Policy Considerations are Important Factors that Must be Considered

In 2007, the United States was the largest software market in the world by revenues, but also incurred the largest national losses, totaling over $8 billion in personal computer software, a sub-sector of the overall software industry.[6] It is vital to the national economy that significant incentives, such as strong, predictable patent system are provided to encourage investment in innovation, startup companies and established firms alike.

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[5] *See* "Fifth Annual BSA and IDC Global Software Piracy Study," Business Software Alliance, p.5, February 25, 2009.

[6] *See* id.

From a global competition perspective, other nations and regions are evaluating the patentability of software, which places the United States in the spotlight in terms of its efforts to recognize and award innovation in a rapidly growing industry. For example, in March of 2008, the president of the European Patent Office forwarded a series of questions regarding patentability of software-related inventions to the Enlarged Board of Appeal for the European Patent Office for reconsideration.[7] Given the significant investment that Europe has made in the global software industry, second only to the United States, it is likely that Europe will be affected by the United States' actions with regard to the patent eligibility of software (i.e., process-related inventions). With rapidly growing economies such as China and India, both of which have access to many of the same resources (e.g., highly-educated population, domestic and foreign investment, institutional and governmental support of entrepreneurship, developing intellectual property regimes, among others) that led to the predominant success of the U.S. software industry, patent protection for software-related companies is imperative to maintaining our leadership role in the global software industry.

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[7] *See* Letter from Alison Brimelow, President, *European Patent Office*, to Peter Messerli, Chairman of the Enlarged Board of Appeal, European Patent Office (October 22, 2008) <http://documents.epo.org/projects/babylon/eponet.nsf/0/B89D95BB305AAA8DC12574EC002C7CF6/$File/G3-08_en.pdf>.

As process-related inventions are used in a wide range of industries such as manufacturing, automotive, electronics, computers, software development, retail, financial, entertainment, media, and many others that must make, use, sell, offer to sell, or import software, this Court must, in granting the present petition, refine the test for determining patent-eligible subject matter so as to avoid damaging industries and technologies that are becoming increasingly relevant to the United States and its leadership role in a global economy.

B. Software and Information Technology Industries are Critical to the US Economy and a More Flexible Interpretation of the Standard for Patentability of Process-Related Inventions such as Software is Required

Software development has advanced technologically to the point where programming and formatting languages today are used due to the increasing complexity of applications and computer programs. It is not uncommon for software programs that are developed for desktop or server (i.e., larger, more power computers used within an enterprise, such as a larger company or government agency) applications to take months or years to develop with the use of skilled software programmers, developers, and architects. The Federal Circuit's rigid interpretation of *Benson*, *Diehr*, and the "machine-or-transformation" test insufficiently addresses advance technologies in areas such as distributed computer architecture, cloud computing, search engines, podcasting, telecommunications network routing and security, entertaining computer games configured for gameplay with millions of users interacting within virtual worlds, software development tools, and many others. These technologies are not reliant upon a "particular machine," the requirement of a transformation of an underlying physical article, or manipulating data that is an electronic signal representative of a physical object or substance, both of which are not necessary to software. In many cases, software may not require the use of a display or interface, which suggests that patent protection would be eligible at only particular stages in the development lifecycle of software.

Many aspects of these innovations are intangible in nature and process data that is not representative of a physical article or thing. Transformations occur as data is often converted from one format to another by various modules of source code, the keel of all software. The development of source code for computer programs today often relies upon the use of "object-oriented" languages that are used to represent several logically grouped operations (i.e., objects), thus saving a software developer from having to spend hours, if not days, on low-level programming tasks. Software does not necessarily require or involve a particular machine or transformation of an article to a different state or thing, as required by the Federal Circuit, but also represents neither a collection of "mental steps" nor a pre-emption of fundamental principles.

The present case provides the Court with an opportunity to clarify the extent to which patent-eligible subject matter may be found in process-related inventions. Software requires substantial investment to develop innovative applications, using different types of programming languages so as to enable simple and complex development efforts, saving time, money, and labor. However, competition is global in scale and a weakened patent system for the protection of software-related inventions may cause offshore development of emerging technologies, eviscerate the American software and information technology industries, reduce incentives to invest in software-based or software-dependent companies, eliminate incentives to innovate due to a weakened ability to stave off competitive threats such as infringement, expropriation, or piracy, and encourage reliance upon weaker forms of protection for software, notably copyright.[8]

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[8] JOSH LERNER & FENG ZHU, WHAT IS THE IMPACT OF SOFTWARE PATENT SHIFTS? EVIDENCE FROM LOTUS V. BORLAND, INT'L J. INDUS. ORG. 25, 511 (2007)

CONCLUSION

Based on the foregoing reasons, Borland respectfully requests that the Court grant the writ of certiorari to establish the standard for determining patentability of process-related inventions that is consistent with its previous decisions, but contemporaneously adapted to address software-related inventions and other emerging technologies.

Very respectfully,

Scott S. Kokka*
KOKKA & BACKUS, PC
200 Page Mill Road, Suite 103
Palo Alto, CA 94306
(650) 566-9912

Kenneth R. Backus, Jr.
KOKKA & BACKUS, PC
200 Page Mill Road, Suite 103
Palo Alto, CA 94306
(650) 566-9912

*Counsel of Record
Counsel for Amicus Curiae,
Borland Software Corporation

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IN THE

Supreme Court of the United States

BERNARD L. BILSKI and RAND A. WARSAW,

Petitioners,

v.

JOHN J. DOLL, Acting Under Secretary of Commerce
for Intellectual Property and Acting Director,
Patent and Trademark Office,

Respondent.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF *AMICUS CURIAE* BOSTON PATENT LAW ASSOCIATION IN SUPPORT OF PETITIONERS

STEVEN J. HENRY
ROBERT M. ABRAHAMSEN
WOLF, GREENFIELD AND SACKS, P.C.
600 Atlantic Avenue
Boston, MA 02210
(617) 646-8000

JOEL R. LEEMAN
Counsel of Record
JOHN J. STICKEVERS
JAKUB M. MICHNA
BROMBERG AND SUNSTEIN LLP
125 Summer Street
Boston, MA 02110-1618
(617) 443-9292

Attorneys for Amicus Curiae
Boston Patent Law Association

221344

COUNSEL PRESS
(800) 274-3321 • (800) 359-6859

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INTEREST OF AMICUS CURIAE[1]

The Boston Patent Law Association (BPLA) is an eighty-five year old association of over seven hundred intellectual property professionals (lawyers, patent agents, and paralegals) practicing within the First Circuit. The BPLA provides educational programs and a forum for the interchange of ideas and information concerning patent, trademark, copyright, and other intellectual property rights. The Association's members serve a broad range of parties who rely upon the patent system: independent inventors, businesses of all sizes, the investment banking and venture capital communities, universities, research hospitals and other non-profit institutions.

The BPLA desires a reliable patent system that fulfills its Constitutional role of promoting the progress of the useful arts. It views the decision below as a threat to that role, because it injects instability into the system and quashes critical incentives for innovation, to the detriment of the American economy.

The BPLA takes no position on the eligibility of Petitioners' claimed invention for a patent. Rather, the petition should be granted so this Court can address the important question of law it raises and, in doing so, restore a proper rule of patent-eligibility against which Petitioners' invention, and other method inventions, can be fairly measured.

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[1] No counsel for a party authored this brief in whole or in part, and no such counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than the *amicus curiae*, its members, or its counsel made a monetary contribution to its preparation or submission. Petitioners and respondent have indicated their consent to the filing of this brief by, respectively, filing a letter with the Clerk of the Court and serving a letter on amicus's counsel. The respondent's letter is submitted herewith. All counsel of record received notice of amicus's intention to file this brief at least ten days before it was due.

SUMMARY OF THE ARGUMENT

The machine-or-transformation requirement that the Federal Circuit has newly imposed on method claims sharply disrupts the well-founded expectations of inventors, practitioners, investors, and—not least of all—of this Court, as to the broad statutory eligibility for patent protection of "any new and useful process." Even as the Federal Circuit professes to discern the origin of its restrictive test in a too-close reading of this Court's precedent, that same precedent explicitly forswears such a test.

Congress enacted an inclusive test for patent eligibility, recognizing that paradigm-changing inventions come in unpredictable forms and often push existing frontiers. This Court has made similar observations. The Federal Circuit, however, subverts the broad legislative purpose with a restrictive test that will inevitably block valuable inventions.

Indeed, it is plain that many celebrated innovations of the past that truly reshaped our world would have been denied full patent protection under the machine-or-transformation test. Where the invention is embodied as a method or a process, an apparatus or system claim does not provide adequate protection. The danger of the lower court's pronouncement is that method inventions of equal scientific and creative eminence, that may be claimed in pending and future applications, will be rejected for form, rather than substance. As patents are essential to attract investments in great ideas, an improperly narrow test will impair the commercialization of inventions, causing harm to the economy and constraining the introduction of useful products and services to the public.

The Court should grant certiorari and restore the broad eligibility for patent protection that Congress intended for innovative methods and processes.

ARGUMENT

I. Law and Precedent Forbid the Federal Circuit's Exclusion of Certain Methods and Processes from Patent Protection

A. This Court Has Historically Accommodated New Technologies by Broadly Interpreting Section 101 of the Patent Act

In the eighteenth century, the cutting edge of technology included plows, sextants, and smelting processes, that is, the machines and arts needed for what was largely an agricultural and seafaring nation still on the verge of the Industrial Revolution. In that era, it would have been harmless to confine eligible subject matter to machinery or industrial processes, because innovation was limited to physical building blocks such as iron and steel, springs and gears, and steam and water power. Electricity was not yet harnessed, and the microscope had as yet yielded relatively little.

But in the nineteenth century, new inventions progressed from the seen to the unseen – from the transmission of electrical signals over a distance (Morse's telegraph, Patent No. 1,647 and Bell's telephone, Patent No. 174,465), to incandescence (Edison's light bulb, Patent No. 223,898).

A narrow definition of eligible subject matter, limited to physical machines or industrial processes, would have blocked these landmark inventions from a full measure of patentability. Without the incentives created by our patent system, these world-altering innovations may never have come to be, let alone entered the public domain when the limited term of their patents expired. Crucially, this Court accommodated this new wave of technology by endorsing a broad rule for subject matter eligibility.

Section 101 of the Patent Act of 1952 defines the scope of eligible subject matter. *Any useful* process or thing may be eligible for patent protection:

> Whoever invents or discovers *any* new and *useful* process, machine, manufacture, or composition of matter, or *any* new and *useful* improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. § 101 (emphasis added). This Court has interpreted this provision broadly to fulfill the legislative mandate. *Diamond v. Chakrabarty*, 447 U.S. 303, 308-309 (1980) (noting that "Congress plainly contemplated that the patent laws would be given wide scope," and

that "Congress intended statutory subject matter to 'include anything under the sun that is made by man'").[2]

This Court has also recognized that the legislature intended a broad rule for patent eligibility because valuable inventions are often unforeseeable – and a broad rule provides protection for such unforeseeable inventions. *Chakrabarty*, 447 U.S. at 316 ("A rule that unanticipated inventions are without protection would conflict with the core concept of the patent law that anticipation undermines patentability.").

This broad statutory language is subject to only a few judicially created exclusions. Laws of nature, natural phenomena, and abstract ideas are not patent-eligible, as a matter of public policy. *Diamond v. Diehr*, 450 U.S. 175, 185 (1981) ("Such discoveries are 'manifestations of . . . nature, free to all men and reserved exclusively to none.'"). These are the only exclusions enunciated by this Court. Outside of these three exclusions, any useful process or thing is eligible for patent protection, provided it satisfies other statutory requirements (*e.g.*, novelty, non-obviousness, definiteness).

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[2] As recently as the American Inventors Protection Act of 1999, Congress had an opportunity to limit the scope of eligible subject matter—in this instance, by excluding business method inventions from protection. Instead of doing so, Congress implicitly approved of broad subject matter eligibility by leaving Section 101 unchanged; Congress merely amended Section 273 to include an "earlier inventor" defense for parties alleged to infringe methods "of doing or conducting business." American Inventors Protection Act of 1999, S. 1798, Cong. 106th (1999) (as introduced to the Senate, Oct. 27, 1999) (codified at 35 U.S.C. § 273(b)(1)).

B. The Machine-or-Transformation Requirement Conflicts With This Court's Precedent

Although this Court—in harmony with Congressional legislation—has consistently endorsed a broad rule for patent eligibility, the Federal Circuit has now turned Section 101 on its head. *In re Bilski* enunciates a radically narrow standard for subject matter eligibility, 545 F.3d 943 (Fed. Cir. 2008) (*en banc*), based on a misreading of this Court's jurisprudence. As the Federal Circuit would have it, process claims must either be "tied to a particular machine or apparatus" or "transform a particular article into a different state or thing." *Id.* at 954. The court emphasizes that its new "machine-or-transformation test" is now the "governing test" for eligibility of process claims. *Id.* at 956. If a process claim does not meet one of these two prongs, it is not eligible for patent protection.

Yet, this Court has consistently stated that physical transformation and connection to a machine are not requirements for the patent eligibility of processes. In *Gottschalk v. Benson*, for example, this Court explicitly addressed these restrictions:

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a "different state or thing." *We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.* It is said that the decision precludes a patent for any program servicing a computer. We do not so hold.

> It is said we freeze process patents to old technologies, leaving no room for the revelations of the new, onrushing technology. *Such is not our purpose.*

409 U.S. 63, 71 (1972) (emphasis added). This Court reinforced this viewpoint in *Parker v. Flook*, the second modern case on eligibility of process claims:

> An argument can be made, however, that this Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a "different state or thing." As in *Benson*, *we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents.*

437 U.S. 584, 589, n.9 (1978) (citations omitted and emphasis added). Thus, the Federal Circuit's new standard, which requires that a process either be tied to a machine or transform an article, contravenes the guidance of this Court.

The Federal Circuit concedes that its machine-or-transformation test is not prefigured by this Court's pronouncements in *Benson* and *Flook*: "We recognize, however, that the [Supreme] Court was initially equivocal in first putting forward this [machine-or-transformation] test." *Bilski*, 545 F.3d at 956. This gentle acknowledgment, however, does not go far enough, and it revises history. This Court did not "put forward" such a test, much less do so in an "equivocal" fashion.

Id. at 979 (Newman, J., dissenting) ("Although my colleagues now describe these statements [in *Benson* and *Flook*] as 'equivocal,' there is nothing equivocal about 'We do not so hold.'").

The Federal Circuit infers Supreme Court approbation for the machine-or-transformation test from this Court's purported silence in its latest case on process eligibility. Specifically, the lower court reads much into the fact that the *Diamond v. Diehr* opinion did not reiterate *Benson* and *Flook*'s reservations about a restrictive test of patent eligibility: "[T]his caveat was *not repeated* in *Diehr* when the [Supreme] Court reaffirmed the machine-or-transformation test." *Id.* at 956 (emphasis in original).

The Federal Circuit's reasoning begs the question of whether this Court ever affirmed the machine-or-transformation test in the first place, let alone "reaffirmed" it. The answer to this question is an emphatic *no*. In *Benson* and *Flook*, this Court explicitly disapproved the machine-or-transformation test. This Court's act of not repeating itself in *Diehr* does not indicate a warming toward a test that was previously viewed as too rigid to accommodate inventions entitled to protection.

Instead of following the plain import of *Flook* and *Benson*, the Federal Circuit focuses on a 28-word clause from the *Benson* case, which it claims as support for its machine-or-transformation test:

> Transformation and reduction of an article "to a different state or thing" is the clue to

> the patentability of a process claim that does not include particular machines.

409 U.S. at 70 (emphasis added). The Federal Circuit explains that the usage of the definite article indicates that transformation is the *only* clue to — that is, an essential requirement for — patentability of process claims not tied to machines:

> We do not consider the word "clue" to indicate that the machine-or-implementation test is optional or merely advisory. Rather, the [Supreme] Court described it as *the* clue, not merely "a" clue.

Bilski, 545 F.3d at 956, n. 11. (emphasis in original).

This statement is the sole basis for the Federal Circuit's machine-or-transformation test. The irony of the Federal Circuit's analysis is that it derives support for the machine-or-transformation test from a labored reading of an excerpt from an opinion that, as shown above, expressly distances the Court from such narrow criteria for patent eligibility.

Moreover, the *Diehr* case itself does not support the machine-or-transformation test. The Federal Circuit reasons that *Diehr* "reaffirmed" the principle that transformation is *the* clue to patentability of a process claim that does not include particular machines. *Id.* at 956. But this interpretation is not supported by the facts and holding of *Diehr*.

In *Diehr*, this Court held that a particular process (for curing synthetic rubber) was eligible for patent protection. 450 U.S. at 187, 191. Where the ruling is expressly inclusionary—that is, it holds a process to be encompassed by Section 101—it is anomalous to discern an announcement by this Court of an exclusionary rule, namely, one that places certain processes *beyond* the ambit of Section 101. Also, since the patent claim in *Diehr* was in fact tied to machines, the case provided no suitable occasion to hold that transformation is a clue to patentability of a process claim that does *not* include particular machines.

The claim at issue required both a computer and a rubber-molding press, *id.* at 180, and this Court's holding did not therefore depend on transformation at all. In fact, when referring to transformation, the *Diehr* court preceded the phrase "transforming or reducing an article to a different state or thing" with an "e.g.," denoting that transformation is just one example, not an exclusive requirement of eligibility.[3]

The Federal Circuit has transformed this Court's insights and open-ended examples of eligible subject matter into an inflexible machine-or-transformation test. Manifestly, the Federal Circuit has misconstrued this Court's broad vision and guidance concerning patent eligibility.

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[3] "[W]hen a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (*e.g.*, transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101." *Diehr*, 450 U.S. at 192.

This Court granted certiorari in 2006 to strike down an inflexible rule devised by the Federal Circuit for determining the obviousness of an invention under Section 103 of the Patent Act: "Rigid preventative rules that deny factfinders recourse to common sense, however, are neither necessary under our case law nor consistent with it." *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1742-43 (2007).

The Federal Circuit's newly created test in *Bilski* calls out for equally urgent attention, as it goes to a concern even more foundational to the patent system: Will the broad Congressional protection for "any new and useful process" be circumscribed in a manner that is at odds with this Court's pronouncements? The Boston Patent Law Association respectfully asks the Court to grant certiorari to restore a capacious and flexible approach to the eligibility requirement of Section 101.[4]

C. The Federal Circuit's New Test Undermines the Broad Purpose of Section 101

The machine-or transformation test clashes with Section 101, with legislative intent, and with over a century of precedent and settled expectations. Congress created an inclusive rule for eligibility, subject to only three judicially created exclusions, *Chakrabarty*, 447 U.S. at 308-309, but in *Bilski*, the Federal Circuit excludes all processes unless they meet one of only two requirements.

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[4] Sections 102, 103 and 112 of the Patent Act, when properly applied, provide safeguards against the granting or enforcement of unmeritorious patent claims. 35 U.S.C. §§ 102-103, 112. Section 101 was not intended to take their place.

The legislature intended a broad rule for patent eligibility because valuable innovations often "push back the frontiers" and arrive in unexpected forms. *Id.* at 316. The Federal Circuit rule inevitably withholds protection for certain unforeseeable processes. Indeed, under its new standard, only processes of a predetermined type are allowed, namely, those that are tied to a machine or transform an article.

The Federal Circuit has tacitly acknowledged the infirmity and obsolescence of its standard by recognizing that it may need to be altered to accommodate new technologies:

> Nevertheless, we agree that future developments in technology and the sciences may present difficult challenges to the machine-or-transformation test, just as the widespread use of computers and the advent of the Internet has begun to challenge it in the past decade. *Thus, we recognize that the Supreme Court may ultimately decide to alter or perhaps even set aside this test to accommodate emerging technologies. And we certainly do not rule out the possibility that this court may in the future refine or augment the test or how it is applied.* At present, however, and certainly for the present case, we see no need for such a departure . . .

Bilski, 545 F.3d at 956 (emphasis added).

It is not for the Federal Circuit, however, to decide which categories of processes or other inventions are eligible for patent protection. *Benson*, 409 U.S. at 72-73 (explaining that the eligibility of software is a "policy matter" to which the legislature, not the Court, is competent to speak). In categorically limiting patent-eligible processes to machines and transformations, the Federal Circuit exceeds its judicial function.

Where a court oversteps its bounds and announces a rule contrary to statute (". . . any new and useful process . . .") and legislative intent, grant of certiorari is appropriate to restore the law. *Comm'r of Internal Revenue v. Asphalt Products Co., Inc.*, 482 U.S. 117, 120 (1987) (where lower court's holding conflicts with another circuit court's "and is in obvious conflict with the plain language of the statute, we grant certiorari . . ."). This is particularly true where the rule provides a perilously narrow answer to one of the most fundamental questions within the patent universe: What is eligible for patent protection? *Cardinal Chemical Co. v. Morton Int'l, Inc.*, 508 U.S. 83, 89 (1993) (granting certiorari because a rule defining patent rights "is a matter of special importance to the entire Nation.").

II. The Machine-or-Transformation Test Calls the Patentability of Many Landmark Inventions Into Question

Innumerable inventions over the decades have been protected by method claims that are neither apparatus-tied nor transformation-reciting. Some were pivotal discoveries of far-reaching economic and social consequence. Had the Federal Circuit's "machine-or-transformation" requirement prevailed at the time, these methods and processes would likely not have earned patent protection and their proven capacity to beneficially shape our world would likely not have been realized.

The Federal Circuit has imposed an aggressive test that conflicts with Congressional intent, this Court's precedent, and the settled expectations of the creative and investment communities. The test threatens innovation and associated commercial activity, and threatens scientific and economic incentives in this country.

Such effects may not have been intended by the Federal Circuit, but they are the foreseeable result of the machine-or-transformation test. The following are examples of issued, but expired, patents for momentous inventions that, experience and common sense dictate, should be eligible for patent protection.

Few would expect that foundational inventions in FM radio would fall outside the patent system. Yet, consider U.S. Patent No. 1,342,885, granted to Edwin Armstrong, the so-called father of FM radio, for devising a process which was rapidly adopted in nearly all radio communication, and remains the standard approach for converting the received radio signal to a lower frequency for intermediate processing. Claim 1 of the Armstrong patent reads:

> 1. The method of amplifying and receiving high frequency electrical oscillatory energy which comprises, combining the incoming energy with locally generated high frequency

> continuous oscillations of a frequency differing from said incoming energy by a third readily-amplifiable high frequency, converting the combined energy by suitable means to produce said readily-amplifiable high frequency oscillations, amplifying the third said high frequency oscillations, and detecting and indicating the resulting amplified oscillations.

Claim 1 does not recite a machine or apparatus and therefore does not meet the machine prong of the test. The claim involves a series of combining and amplifying steps. But these steps are performed on "energy" (*i.e.*, a signal), and therefore this claim would ill-qualify for protection under the transformation prong of the test because no "article" is transformed. *See In re Nuijten*, 500 F.3d 1346, 1353, 1356 (Fed. Cir. 2007) (holding that signals are transitory and intangible, and therefore do not qualify as "manufactures" or "articles"). Yet it is clear that the claim is directed to the operations of a radio receiver and, as such, would conventionally be understood to be eligible for patent protection.[5]

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[5] Cast similarly into doubt would be the eligibility of claim 2 of U.S. Patent No. 4,200,770 to Martin Hellman, *et al.*, for "Cryptographic Apparatus and Method." The Hellman patent covers the so-called public key encryption system, an invention of immense significance to the world of data communication, effectively enabling secure communications for modern e-commerce, and other types of transactions. While a transformation of data arguably occurs, that data could as easily represent English language text as a voltage measured in a circuit. Hence, the transformation appears not to satisfy the *Bilski* criterion.

The vast field of information and signal processing extends, of course, beyond radio, to such diverse areas of endeavor as television, the Internet, computing, control systems, image processing and medical imaging. While the underlying "hardware" will embody some of the advances achieved in these areas, often it is the method where an invention resides: whether a way to send more information over a given bandwidth (*e.g.*, more channels on a TV cable or fiber); or a more efficient means to store data; or a process for transmitting information securely.

The invention in these instances is not in the machine but in the process or method followed by the machine. Obtaining patent coverage only for the hardware embodiments in the patent application, but not on the process itself, often fails to protect the invention adequately. To establish that certain parties are direct infringers, method claims are required.

A more modern example than FM radio comes from the world of wireless communications. Qualcomm's U.S. Patent No. 4,901,307, issued in 1990, discloses the CDMA (carrier-division, multiple access) technology that lies at the heart of the dominant cellphone transmission standard in use in this country. While much of the claim set is devoted to apparatus claims, there is also a significant group of method claims, beginning at claim 33:

> 33. In a spread spectrum multiple access communication system . . . a method for providing high system user capacity . . . comprising the steps of:

> *providing* a plurality of system user addressable narrow band information *signals*;
>
> *converting* said plurality of system user addressable narrow band information *signals* into . . . wide band code-division-spread-spectrum communication signals;
>
> *transmitting* said plurality of code-division-spread-spectrum communication *signals* between system users;
>
> *receiving*, at each respective system user, . . . code-division-spread-spectrum communication *signals* . . . ;
>
> *providing* for each respective system user an increase in system user realized average *signal power* . . . ; and
>
> *converting*, at each respective system user, received address corresponding code-division-spread-spectrum communication signals into corresponding user addressable information *signals*.

(emphasis added.)

Manifestly, this claim does not recite steps that are tied to a specific machine or apparatus. As in the FM radio patent, this claim requires the manipulation of signals, but signals are not articles, *see Nuijten*, 500 F.3d at 1353, 1356, and the plain language of the machine-or-transformation test would place in doubt the patent-eligibility of this claim. Over the past decade, CDMA technology has been the backbone of the cellular communications industry. The fact that such a method could be ineligible is a telling indictment of the *Bilski* test's incapacity to accommodate emerging innovations.

Certain inventions in the fields of medical diagnostics and treatments would also have been thwarted by the machine-or-transformation requirement. One such example is U.S. Patent No. 4,459,286, titled "Coupled Haemophilus Influenzae Type B Vaccine. The inventor, Maurice Ralph Hilleman, is hailed as the most prolific vaccine scientist of the twentieth century by the National Inventors Hall of Fame. He was singled out for "saving more lives than any other scientist" and was inducted into that prestigious body in 2007 with a citation to U.S. Patent No. 4,459,286.[6]

Claim 6 of that patent reads:

> 6. A method of treating mammalian species which comprises administering to said species an immunologically effective amount of a composition comprising a polysaccharide/protein conjugate which comprises H. influenza type b polysaccharide and a T-cell-stimulating N. meningitidis serotype outer membrane protein, said polysaccharide and protein being coupled through 6-aminocaproic

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[6] Invent.org, Hall of Fame, Maurice Ralph Hilleman, http://www.invent.org/hall_of_fame/339.html (last visited Feb, 24, 2009).

> acid, and a member of the group consisting of a pharmaceutically-acceptable carrier, an adjuvant, and a pharmaceutically-acceptable carrier and adjuvant.

This claim does not perform any type of transformation. It simply requires administering a composition. Furthermore, there is no machine or apparatus in this claim. A polysaccharide/protein conjugate is a composition of matter or a manufacture, but it is not a machine or apparatus. Accordingly, this famed invention would also be susceptible to attack under the new test.

The impact of the machine-or-transformation test on drug development can only be detrimental. Patent protection for both new drugs and for new uses of known drugs (whether or not already approved for a primary use) is needed in many instances to justify the outsize expenses and risk in the process of conducting clinical trials and securing FDA approval. There is no indication the Federal Circuit contemplated this consequence.

These examples illustrate that numerous claims associated with epochal inventions would not have satisfied either prong of the machine-or-transformation test—thus demonstrating this Court's wisdom in not making such a test the measure of patent-eligibility and the Federal Circuit's clear error in doing so.

III. The Lower Court's Formula for Patent Eligibility Creates Uncertainty That Will Cause Lasting Harm to Innovation

A patent is a contract between the patentee and society. The patentee discloses to the public a new and useful invention and, in exchange, is rewarded with a limited term of exclusivity.

> In consideration of [an invention's] disclosure and the consequent benefit to the community, the patent is granted. An exclusive enjoyment is guaranteed him for seventeen years, but, upon the expiration of that period, the knowledge of the invention enures to the people, who are thus enabled without restriction to practice it and profit by its use.

U.S. v. Line Materials Co., 333 U.S. 287 339-340 (1948) (Douglas, J., concurring). In this manner, the patent system fulfills the Constitution's mandate to "promote the progress of science and useful arts."

The patent system not only promotes innovation, but is a *sine qua non* for the commercialization of new inventions, and hence for competition. A patent represents the small entity's indispensable magnet to attract potential investors.[7] The patent is also the only shield that a small entity can use to ward off a big corporation who would copy its inventions.[8] This distinctive attribute of patents has long been extolled:

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[7] *See, e.g.*, Ronald J. Mann, *The Role Of Patents In Venture-Backed Software Start-Ups*, ACAD. ADVISORY COUNCIL BULLETIN 2.1 (THE Progress & Freedom Foundation, Washington D.C.) Apr. 2007, at 5, available at http://www.pff.org/issues-pubs/ip/bulletins/bulletin2.1softwareventurepatents.pdf (explaining that patents play a "role of considerable importance" for investments in software-based start-up companies).

> But if we never needed, or do not now need, patents as bait for inventors, we may still need them, in some instances, as a lure to investors. . . . [I]ndustrial history discloses that [giant] corporations, at times and to some extent, have been prodded into undertaking such research and into developing improvements because of the threat of competition from occasional 'outsiders,' armed with patent monopolies, and supplied with funds by a few private enterprisers. Thus, paradoxically, monopoly may evoke competition: The threat from patent monopolies in the hands of such 'outsiders' may create a sort of competition—a David versus Goliath competition—which reduces the inertia of some huge industrial aggregations that might otherwise be sluggish.

Picard v. United Aircraft Corp., 128 F.2d 632, 643-644 (2d Cir. 1942) (Frank, J., concurring). This constantly regenerating competitive activity provides society with innovations that may otherwise never come into being.

When patent rights become uncertain, these systemic benefits are eroded. If patentees and investors are unsure whether the patent laws will protect the fruit of their labors and investments, then why labor or invest at all? If a giant corporation knows that patents offer uncertain protection, then why should it respect the ownership claim of a smaller competitor?

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[8] *Id.* at 9.

The flaw of the machine-or-transformation test is not that it sets out a new rule; the patent world has adapted repeatedly to reasoned rules from both this Court and the Federal Circuit that clearly guide inventors and practitioners. Nor is the test's excessive restrictiveness its chief cause for alarm. Rather, an equal peril inheres in the vagueness and ambiguity of the test. As a *Bilski* dissenter observes:

> [T]his opinion propagates unanswerable questions: What form or amount of "transformation" suffices [to meet the transformation prong of the test]? . . . What link to a machine is sufficient to invoke the "or machine" prong? Are the "specific" machines of *Benson* required, or can a general purpose computer qualify?

Bilski, 545 F.3d at 1015 (Rader, J., dissenting).[9] Because of these unanswered questions, inventors, investors, patent holders and practitioners alike can no longer discern the eligible from the ineligible.

Even the PTO's own appellate tribunal, the Board of Patent Appeals and Interferences, cannot agree on how to construe the test. Contradictory and arbitrary decisions are issuing from that body already. In one case, the Board decided that a "computerized method performed by a data processor" was not eligible because the data processor was "nothing more than a general purpose computer," which does not qualify as "a *particular* machine or apparatus" under the machine-or-transformation test. *See, e.g., Ex parte Gutta*, No. 2008-3000, 2009 WL 112393 (B.P.A.I. Jan. 15, 2009) (emphasis added). This reasoning singles out computer-implemented methods for exclusionary treatment, giving the brush to computers' central role in modern technology.

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[9] "Uncertainty is the enemy of innovation. These new uncertainties not only diminish the incentives available to new enterprise, but disrupt the settled expectations of those who relied on the law as it existed." *Bilski*, 545 F.3d at 977(Newman, J., dissenting).

Surprisingly, the implications of the machine-or-transformation test extend to statutory classes of inventions other than methods. For example, in another post-*Bilski* case, one panel of the Board upheld a computer-program product claim as patent-eligible because "[i]t has been the practice for a number of years that a [claim] of this nature be considered statutory at the USPTO as a product claim." *Ex parte Bo Li*, No. 2008-1213, 2008 WL 4828137 (B.P.A.I. November 6, 2008). By contrast, yet another panel rejected a computer-program product claim because the machine-or-transformation test purportedly necessitated the rejection. *Ex parte Cornea-Hasegan*, No. 2008-4742, 2009 WL 86725 (B.P.A.I. January 13, 2009).

These helter-skelter rulings overturn expectations built upon the Federal Circuit's opinion of fifteen years ago that a programmed general purpose computer is patent-eligible because it "in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software." *In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir.

1994) (*en banc*). The Federal Circuit's machine-or-transformation test now sheds doubt on years' worth of patents and applications for computer-implemented inventions.[10]

This Court should not wait for the Federal Circuit and the PTO to resolve these issues because too much is at stake. Moreover, under the Federal Circuit's rules, another *en banc* opinion is necessary to change the *Bilski* rule. Petitioners state that the machine-or-transformation test casts a cloud over tens of thousands of issued patents. Petition for Writ of Certiorari at 4, *Bilski et al. v. Doll*, No. 08-964 (Jan. 28, 2009). This is too conservative an estimate. Tens of thousands of patents are issued *each year*, and a very high percentage of patents contain method claims affected by that decision.[11] To wait for new cases to work their way up through the PTO and the lower courts may mean that the Federal Circuit does not provide guidance for some years to come. Delay in restoring the system to its sensible and long-settled position causes upheaval in the technology and commercial spheres that society can ill afford.

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[10] Before *Bilski*, the Patent and Trademark Office had given clear guidance to its examiners regarding the kind of computer-implemented inventions that it understood to pass muster under Section 101. MANUAL OF PATENT EXAMINING PROCEDURE §§ 2106, 2106.01 (8th ed. 2008, rev. 7) ("When functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized."). Now, its Board is struggling to find a consistent reading of the Federal Circuit's decision. That struggle amply demonstrates how inherently problematic the decision is.

[11] In USPTO Class 705, entitled "Data processing: financial, business practice, management, or cost/price determination," there are 18,000 issued patents and at least 48,000 pending applications. In PTO classes 700-704, 706-707, 726, and 902, which are also affected by the machine-or-transformation test, there are over 130,000 issued patents and at least 120,000 applications pending. This information can be accessed through the USPTO website at http://patft.uspto.gov/.

CONCLUSION

For the foregoing reasons, the Court should grant the petition for a writ of certiorari.

Respectfully submitted,

JOEL R. LEEMAN
Counsel of Record
JOHN J. STICKEVERS
JAKUB M. MICHNA
BROMBERG AND SUNSTEIN LLP
125 Summer Street
Boston, MA 02110-1618
(617) 443-9292

STEVEN J. HENRY
ROBERT M. ABRAHAMSEN
WOLF, GREENFIELD AND SACKS, P.C.
600 Atlantic Avenue
Boston, MA 02210
(617) 646-8000

Attorneys for Amicus Curiae
Boston Patent Law Association

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Supreme Court of the United States

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BERNARD L. BILSKI AND RAND A. WARSAW,

Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY
OF COMMERCE FOR INTELLECTUAL PROPERTY
AND ACTING DIRECTOR OF THE UNITED STATES
PATENT AND TRADEMARK OFFICE,

Respondent.

◆

**On Petition For Writ Of Certiorari
To The United States Court Of Appeals
For The Federal Circuit**

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THOMAS G. FIELD, JR.
Counsel of Record
Professor of Law
FRANKLIN PIERCE
LAW CENTER
2 White Street
Concord, NH 03301
(603) 513-5147

Of Counsel:
J. JEFFREY HAWLEY
Director Amicus Brief Clinic
Professor of Law
ANN M. MCCRACKIN
Professor of Law
FRANKLIN PIERCE LAW CENTER
2 White Street
Concord, NH 03301
(603) 228-1541
Amicus Curiae

COCKLE LAW BRIEF PRINTING CO. (800) 225-6964
OR CALL COLLECT (402) 342-2831

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INTEREST OF AMICUS CURIAE[1]

The Franklin Pierce Law Center (FPLC) has established an Intellectual Property Amicus Brief Clinic.[2] With faculty guidance and student participation, the Clinic seeks to file amicus briefs that will lead to the development and predictable application of intellectual property law to promote innovation and competition. The Clinic selects cases where it is hoped that the amicus brief it submits will contribute important perspectives that might not be adequately represented by the parties.

Through its selection process, the Clinic has determined that this case is of extreme importance to the development of patent law. While this brief agrees with petitioners' brief in all respects, it presents some additional perspectives that the Clinic believes will be helpful in deciding to grant certiorari.[3]

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[1] The parties were notified ten days prior to the due date of this brief of the intention to file. The parties have consented to the filing of this brief. The Petitioner has filed a general consent for amicus curiae briefs with the Court. Consent has been obtained from the Solicitor General to file this brief.

Pursuant to this Court's rule 37.6, amicus represents that this brief was not authored in whole or in part by counsel for any party. FPLC discloses that it maintains an Advisory Committee on Intellectual Property (ACIP) that includes representatives from industry, trade organizations and various law firms. Until recently, the chairman of ACIP was Ron Myrick who participated in the preparation of the Petitioner's brief. However, neither Mr. Myrick nor any other non-faculty member of ACIP played any role in the consideration of whether to file this brief nor any role in its preparation. No person or entity other than FPLC has made any monetary contribution to its preparation or submission.

[2] Student members of the FPLC Intellectual Property Amicus Brief Clinic are listed in Appendix 1.

FPLC expressly declines to take any position regarding the ultimate conclusion with respect to the patentability of Petitioners' claims. The only issue of concern to FPLC in this case is the test for determining the eligibility of the method claims under the provisions of 35 U.S.C. § 101. FPLC believes that the mandate for the patent system found in the Constitution has been broadly implemented by Congress. This Court has repeatedly recognized this expansive implementation. The decision below is not consistent with this broad mandate. The decision below narrowly restricts the type of methods that are eligible for patent protection. Implementation of the Court of Appeals for the Federal Circuit's decision in this case would a) disturb existing property rights and b) severely decrease incentives for further innovation. These concerns have prompted FPLC to urge that certiorari be granted.

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[3] In the "ARGUMENT" section below, the present brief will try not to be redundant with the well-documented positions of Petitioner. This should not be taken as lack of support for these positions.

SUMMARY OF ARGUMENT

The Court has taken the Congress' lead in interpreting the provision of the patent act dealing with patentable subject matter. Up until this recent decision, the Federal Circuit has followed the Court in its application of the broad standard for patentability. Since the Court has last taken up the issue of patentability, two industries the Court weighed in on, biotechnology and software, have been high growth areas in the U.S. market. The United States remains at the forefront of these fields due to these broad intellectual property rights.

Many independent entities have studied patent system reform. While there is disagreement in how the system should be improved, most do not advocate limiting the scope of patentable subject matter. And while there were various opportunities for Congress to limit the scope of patent eligibility to be in conformity with other patent systems, Congress consistently decided against limits.

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INTRODUCTION

The Constitution, Article I, Section 8, Clause 8, authorizes Congress to establish a patent system, "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." This expansive authorization, in turn, has been implemented by Congress but with a number of restrictions. There are restrictions regarding novelty, utility and unobviousness, as well as other requirements such as a strict disclosure standard. However, the threshold question of exactly what constitutes the type of invention eligible for patent protection has been implemented expansively. Section 101 of 35 U.S.C. defines patentable subject matter as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent thereof, subject to the conditions and requirements of this title.

35 U.S.C. § 101 (2006).

This Court has consistently interpreted this definition almost without restriction. The Court has acknowledged that Congress intended statutory subject matter to "include anything under the sun made by man" citing the Committee Reports for the 1952 revision of the Patent Act.[4] The last decisions of this Court relating to patentable subject matter placed only logical and understandable limits on patentable subject matter excepting only "laws of nature, natural phenomena, and abstract ideas." *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980); *Diamond v. Diehr*, 450 U.S. 175, 182, 185 (1981). Following this lead, the Federal Circuit in *State*

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[4] S. Rep. No. 82-1979, at 5 (1952)

Street Bank applied a "useful, concrete, and tangible result"[5] test to determine if a practical application existed for an abstract idea (i.e., mathematical algorithm, formula or calculation). *State Street Bank & Trust Co. v. Signature Financial Group, Inc.,* 149 F.3d 1368 (Fed. Cir. 1998). While this test is not necessarily an exclusive test, this test does operate to preclude the patentability of mere "abstract ideas" and has served the patent system well for 10 years. Significantly, in *State Street Bank*, the Federal Circuit eliminated the so-called "business method" exception to patentable subject matter. *Id.* at 1375.

Since *Chakrabarty* and *Diehr*, industries affected by those decisions have thrived. Also, since those decisions, several in-depth studies of the patent system have been completed. Further, bills have been proposed and debated in Congress to reform the patent system. Congress has not chosen to amend 35 U.S.C. § 101 during this time. Indeed, in the interim, Congress has acknowledged that methods can be methods "of doing or conducting business" 35 U.S.C. § 273(a)(3) (2006). Congress did not require that the method be tied to a particular machine or to transform a particular article into a different state or thing. Business methods are recognized by Congress as statutory subject matter but would routinely fail the new Federal Circuit rule announced in this case.

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[5] The phrase "useful, concrete, and tangible" as it relates to patent eligibility appears first in *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994).

So, what is the new Federal Circuit rule regarding the patentability of method inventions? A process is patent-eligible *only* if "(1) it is tied to a particular machine or apparatus, *or* (2) it transforms a particular article into a different state or thing." *In re Bilski*, 545 F.3d 943, 954 (Fed. Cir. 2008). This is not just a permissible test. It is the definitive test for all method claims.[6]

This "particular machine or transformation" test is not just a minor tweak. Moreover, it does not affect just "business method" inventions, the subject matter of the present case, but will also significantly affect the patentability of all method inventions. FPLC agrees with Judge Newman's dissent where she points out:

> The court today acts *en banc* to impose a new and far-reaching restriction on the kinds of inventions that are eligible to participate in the patent system. The court achieves this result by redefining the word "process" in the patent statute, to exclude all processes that do not transform physical matter or that are not performed by machines. The court thus excludes many of the kinds of inventions that apply today's electronic and photonic technologies, as well as other processes that handle data and information in novel ways.

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[6] *Bilski*, 545 F.3d at 960 n. 19 ("As a result, those portions of our opinions in *State Street* and *AT & T* relying solely on a 'useful, concrete and tangible result' analysis should no longer be relied on."). Other previous tests were similarly discarded.

> Such processes have long been patent eligible, and contribute to the vigor and variety of today's Information Age. This exclusion of process inventions is contrary to statute, contrary to precedent, and a negation of the constitutional mandate. Its impact on the future, as well as on the thousands of patents already granted, is unknown.

Bilski, 545 F.3d at 954 (Newman, J., dissenting).

However, our concern goes beyond those expressed by Judge Newman. Numerous biotechnology inventions both in the past and in the future may not pass muster under this restrictive test. *Classen Immunotherapies Inc. v. Biogen IDEC,* Nos. 2006-1634, 2006-1649, 2008 WL 5273107 (Fed. Cir. Dec. 19, 2008), for example, was decided after the present case by the Federal Circuit. The invention in *Classen* related to a biotechnology method. The Federal Circuit published only a terse decision affirming the unpatentability of the method under 35 U.S.C. § 101 in view of their decision in the present case.

Similarly, the fallout in the Patent Office Board of Appeals and Interferences as a result of the Federal Circuit's "machine or transformation" test has been immediate. Since the Federal Circuit's decision in *Bilski*, the Board has issued at least 10 decisions applying the "machine or transformation" test. In all but one of those decisions, the Board found the invention did not meet the test for patentable subject matter under 35 U.S.C. § 101.[7] Most of these inventions were not "business method" inventions, and in some of the cases the claims at issue were not even process claims.[8] For example, in *Ex parte Cornea-Hasegan*, the Board applied the "machine or transformation" test to a computer readable medium claim of the type that has long been considered a machine for purposes of the categories of patentable subject matter defined in 35 U.S.C. § 101. 2009 WL 86725. Yet another example, in *Ex parte Atkin*, the Board reviewed a system claim which has also been considered a machine for purposes of the categories of patentable subject matter defined in 35 U.S.C. § 101. 2009 WL 247868. Although the Examiner had not rejected the system claim under 35 U.S.C. § 101, the Board indicated that the system claim in *Atkin* was not directed to patentable-eligible subject matter as defined in *Bilski* and added a new ground of rejection under 35 U.S.C. § 101 for the system claim. *Id.* Although the Federal Circuit's "machine or transformation" test in *Bilski* is for method claims, the Board is applying the test very broadly to exclude inventions in other categories of patentable subject matter not just the process category. *Id.*

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[7] We express no opinion as to whether any of the claims might have been patentable under the broader "useful, concrete, and tangible result" test.

[8] *Ex Parte Noguichi*, Appeal No. 2008-1231, 2008 WL 4968270 (B.P.A.I. Nov. 20, 2008) (communication over networks); *Ex Parte Roberts*, Appeal No. 2008-1355, 2008 WL 2754746 (B.P.A.I. July 15, 2008) (method using the biomechanics of the eye to provide improved vision through refractive correction); *Ex Parte Godwin*, Appeal No. 2008-0130, 2008 WL 4898213 (B.P.A.I. Nov. 13, 2008) (software); *Ex Parte Gutta*, Appeal No. 2008-3000, 2009 WL 112393 (B.P.A.I. Jan. 15, 2009) (system for recommending items to a target user); *Ex Parte Bo Li*, Appeal No. 2008-1213, 2008 WL 4828137 (B.P.A.I. Nov. 06, 2008) (allowed a method and system for generating a report using software modules); *Ex Parte Becker*, Appeal No. 2008-2064, 2009 WL 191977 (B.P.A.I. Jan. 26, 2009) (automation system); *Ex Parte Cornea-Hasegan*, Appeal No. 2008-4742, 2009 WL 86725 (B.P.A.I. Jan. 13, 2009) (a method for predicting results of floating point mathematical operations); *Ex Parte Koo*, Appeal No. 2008-1344, 2008 WL 5054161 (B.P.A.I. Nov. 26, 2008) (method of optimizing rational database queries); *Ex Parte Halligan*, Appeal No. 2008-1588, 2008 WL 4998541 (B.P.A.I. Nov. 24, 2008) (programmed computer method); *Ex Parte Atkin*, Appeal No. 2008-4352, 2009 WL 247868 (B.P.A.I. Nov. 26, 2008) (system for converting domain names).

In *Gottschalk v. Benson*, 409 U.S. 63, 68 (1972), this Court found that a process claim directed to a mathematical algorithm was non-statutory subject matter because: "Here the 'process' claim is so abstract and sweeping as to cover both known and unknown uses of the BCD to pure-binary conversion." This Court considered the test that the Federal Circuit now says is the only permissible test:

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a "different state or thing". We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents. . . . It is said that we freeze process patents to old technologies, leaving no room for the revelations of the

> new, onrushing technology. Such is not our purpose.

Id. at 71.

Certiorari should be granted so that this court can overturn the Federal Circuit's imposition of an overly restrictive test for method claims. The incentives that Congress intends to provide to emerging technologies and, thus, the competitiveness of the United States are now at stake.

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ARGUMENT

I. THE BROAD SCOPE OF PATENT ELIGIBILITY FROM THIS COURT'S DECISIONS IN *CHAKRABARTY* AND *DIEHR* HAVE SERVED THE COUNTRY WELL

The true test of the success of a statutory scheme and the judicial interpretation thereof is whether or not the constitutional purpose is fulfilled. The patent system is intended to promote the progress of science and the useful arts and has "added the fuel of interest to the fire of genius."[9] Has the expansive interpretation of patentable subject matter promoted industry?

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[9] Abraham Lincoln, *Second Lecture on Discoveries and Inventions*, *in* 3 Intellectual Property Rights: Critical Concepts in Law 36 (David Vaver ed. 2006).

1. Permitting biotechnology patents spawned an industry

The dawn of the modern era in biotechnology is widely attributed to the 1970 invention of the method of recombinant DNA by Cohen and Boyer.[10] A short 10 years later, this Court interpreted 35 U.S.C. § 101 broadly and held that something could be patentable even if it were living. While the *Chakrabarty* invention was directed to a "manufacture" within the meaning of 35 U.S.C. § 101, we believe that this decision sent a strong signal. Unlike many jurisdictions that have severe limits on patentable subject matter,[11] patentable subject matter is expansive in the U.S. System. In *Chakrabarty*, this Court acknowledged, "Congress plainly contemplated that the patent laws be given wide scope." 447 U.S. at 308. Just as the Patent Office opposes the patentability of

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[10] Biotechnology Industry Organization, Biotechnology Industry Facts, http://bio.org/speeches/pubs/er/statistics.asp (last visited Feb. 25, 2009).

[11] *E.g.* Convention on the Grant of European Patents (European Patent Convention), arts. 52(2) and 52(3), Oct. 5, 1973, 1065 U.N.T.S. 255, 271-72, *available at* http://treaties.un.org/doc/Publication/UNTS/Volume%201065/volume-1065-I-16208-English.pdf (explicitly excludes from patentability "programs for computers as such"); Agreement On Trade-Related Aspects of Intellectual Property Rights [TRIPS Agreement] pt. II § 5 arts. 27(2) and 27(3), Apr. 15, 1994, 33 I.L.M. 1197, 1208, *available at* http://www.wto.org/english/docs_e/legal_e/27-trips.pdf (allowing countries to exclude certain subject matter). Congress has chosen not adopt those exclusions.

"business methods" today, so did they oppose the invention in *Chakrabarty*. *Id.* at 306-07.

What has been the result? While the biotechnology industry is hard to define and is constantly changing, one report puts the number of biotechnology companies, *in the United States*, at 1,452 as of December 2006. Publicly traded U.S. biotechnology companies spent $27.1B on research in 2006. Employment in the U.S. was 180,000 in 2006, and these were generally high value jobs. The market cap of the publicly traded U.S. biotechnology companies was $360B as of April 2008.[12] In spite of the naysayers at the time,[13] this Court's confirmation of the broad scope of patentable subject matter to include living things was at best a resounding success in promoting the constitutional purpose in the United States. It clearly was not an impediment.

2. The software industry in the United States is thriving

The other "success story" is illustrated by the aftermath of this Court's decision in *Diehr*. *Diehr* did involve a method – a programmable process or "software." Like the situation with *Chakrabarty*, other jurisdictions place severe restrictions on patentable subject matter that make the patenting of software almost impossible.[14] Like the situation with *Chakrabarty*, the Patent Office opposed the patentability of the invention in *Diehr*, 450 U.S. at 181. Like the situation with *Chakrabarty*, the naysayers said that the patenting of software would mean the end of the industry. *See id.* at 291 (Stevens, J., dissenting) (discussing critics of policy of patenting software).

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[12] Biotechnology Industry Organization, *supra* note 12.

[13] Brief for The People's Business Commission as Amicus Curiae Supporting Appellant, *Diamond v. Chakrabarty*, 447 U.S. 303 (1980) (No. 79-136).

Most recently, the decision in *State Street Bank* raised the same uproar, hailing doom to Internet commerce. *State Street Bank* involved a challenge to a patent relating to a data processing financial services system. The affirmation of the patent by the Federal Circuit created numerous critics arguing against business method patents,[15] more specifically, that business method patents will terrorize the Internet and that cyberspace-related innovation will bottleneck.[16]

What has been the result? In 2008, 7 out of 10 of the largest software companies in the world were

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[14] European Patent Convention, *supra* note 13; TRIPS Agreement, *supra* note 13.

[15] Jeffrey R. Kuester & Lawrence E. Thompson, *Risks Associated with Restricting Business Method and E-Commerce Patents*, 17 Ga. St. U.L. Rev. 657 (2001).

[16] *See* Lawrence Lessig, *The Problem with Patents*, The Industry Standard, Apr. 23, 1999, http://www.thestandard.com/article/0,1902,4296,00.html.

U.S. based.[17] In 2007, 1,662 patents were issued to Microsoft; in 1984, they were not in the top 200 companies receiving patents, thus, fewer than 38.[18] In 2007, at least 14,645 published applications contained at least one claim directed to software.[19] The top 5 companies having patents in the software class 717 in the Patent Office are U.S. companies.[20] In 1996, only 149 patents issued into Class 717. In 2008 there were 1,156.[21] Is all of this patent activity a bad thing? In 2007, a University of California Berkeley Professor, published a paper concluding that entry and competition in the software industry is robust.[22] The abstract is revealing:

> In the 1980s and early 1990s, it was commonly said that patents would severely

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[17] *The Global 2000*, Forbes, Apr. 2, 2008, http://www.forbes.com/lists/2008/18/biz_2000global08_The-Global-2000_IndName_17.html.

[18] Intellectual Property Owners Association, *Top 300 Organizations Granted U.S. Patents in 2007* 2, *available at* http://www.ipo.org/AM/TemplateRedirect.cfm?template=/CM/ContentDisplay.cfm&ContentID=18241 (2008); Intellectual Property Owners Association, *Top 200 Organizations*, *available at* http://www.ipo.org/AM/TemplateRedirect.cfm?template=/CM/ContentDisplay.cfm&ContentID=3377 (1985).

[19] Ann M. McCrackin, *Trends in Software and Business Method Patents*, in Electronic and Software Patents: Law And Practice, §§ 1.01-.05 (2d ed. Supp. 2008).

[20] *Id.* at 1-9 (IBM, Sun, Microsoft, HP and Intel).

[21] *Id.* at 1-11.

[22] Robert P. Merges, *Software and Patent Scope: A Report from the Middle Innings*, 85 Tex. L. Rev. 1627 (2007).

> damage the software industry. . . . I conclude that the early predictions were wrong. This helps explain why we are experiencing what might be called the "normalization" of software patents. Now, the frontier legal issues pertaining to software no longer center on whether it should be patentable in the first place. . . . This serves as an interesting case study in how software firms are acquiring and using patents in their competitive strategies. The overall theme of the Article is normalization: the legal system is integrating software into the fabric of patent law, and software firms are integrating patents into the competitive fabric of the industry.[23]

As with biotechnology, the robust protection of software inventions has been a boon to innovation and to U.S. industry. As with biotechnology employment, jobs in the innovative software industry tend to be high value jobs.

As noted above, the Patent Office reaction to most new technologies is usually to oppose patent eligibility. The usual reasons are lack of capability; usually lack of staff with the requisite expertise or inability to adequately search new areas. These are indeed serious problems but should be solved in a way that does not remove the fuel of interest from the fire of genius.

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[23] *Id.* at 1627.

II. SEVERAL CRITICAL STUDIES OF THE PATENT SYSTEM, POST-*CHAKRABARTY* AND *DIEHR*, HAVE NOT FOUND THAT NARROWING OF THE CONCEPT OF PATENTABLE SUBJECT MATTER IS NECESSARY

Over a 10 year period, the National Academy of Sciences (NAS) undertook an extensive study of the patent system. The result was a report, published in 2004, that concluded that there were numerous aspects of the U.S. patent system that could use improvement.[24] However, the scope of patentable subject matter was not one of them.

The Executive Summary of the NAS report confirms the point we have made above. Broad interpretation of patentable subject matter since 1980, e.g. this Court's decisions in *Chakrabarty* (1980) and *Diehr* (1981), has been a positive force:

> Throughout its history the patent system has had to adapt to evolving conditions, and it continues to demonstrate flexibility and responsiveness today. Since 1980 a series of judicial, legislative, administrative, and diplomatic actions have extended patenting to new technology (biotechnology) and to technologies previously without or subject to other forms of intellectual property protection (software). . . .

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[24] *A Patent System for the 21st Century* 1 (Steven A. Merrill et al., eds., 2004).

> Continuing high rates of innovation suggest that the patent system is working well and does not require fundamental changes. . . .[25]

In fairness, the NAS report does reflect some concerns regarding developments in certain areas of patentable subject matter, including "business methods." However, the NAS recommended improving patent quality to meet these concerns. The NAS report did not include a recommendation to redefine all methods, as the Federal Circuit has done in this case. Specifically, the report endorses a post-grant review system to insure that patents meet other statutory criteria such as novelty, unobviousness and enablement.[26]

Similarly, the Federal Trade Commission conducted thorough hearings and recommended areas of improvement in the patent system to promote competition. One of the speakers, former Patent Office

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[25] *Id.* at 1.

[26] *Id.* at 44 n.11 ("Some members of the committee embarked on our study with great skepticism about the wisdom of patenting business methods in the absence of a convincing case for their protection and with some interest in a contemporary proposal to limit the term of business method patents to three or five years. A few members remain convinced that patents are not the most appropriate form of protection for software inventions. Nevertheless, we soon agreed to focus our efforts on means of ensuring better quality business method and software patents rather than on creating exceptions to the general system. The impact of business method patents merits rigorous study after longer experience.").

Director Rogan, discussed the history of innovation in the U.S. as spurred by the leading patent system.

> Another development has been the expansion of the subject matter of patents. Whenever new technologies are prepared for patenting, such as with microorganisms or computer software, the entry of patent law in these areas was greeted with predictions of disaster. Yet today, the United States is the international leader in these and all other areas of technological advancement.[27]

The FTC's final recommendation was to recommend that a proper review of the costs and benefits be performed prior to making any changes in patentable subject matter. "Decision makers should ask whether granting patents on certain subject matter in fact will promote such progress or instead will hinder competition that can effectively spur innovation."[28] Amending the scope of patentable subject matter was not found to be a pressing need.

Harvard economists Lerner and Jaffe published: "*Innovation and its Discontents: How our Broken*

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[27] Federal Trade Commission, *In the Public Hearing on: Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy*, 25 (2002), *available at* http://www.ftc.gov/opp/intellect/020206ftc.pdf.

[28] Federal Trade Commission, *To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy A Report by the Federal Trade Commission*, ch. 5 p. 43 (2003), *available at* http://www.ftc.gov/os/2003/10/innovationrpt.pdf.

Patent System is Endangering Innovation and Progress, and What To Do About It."[29] They were most critical of the centralization of patent appeals in the Court of Appeals for the Federal Circuit and of the fee based funding of the Patent Office. However, with respect to patentable subject matter, this is what they had to say:

> There is no fundamental reason why an entrepreneur who does come up with a novel and non-obvious method of doing business needs patent protection less than an entrepreneur trying to make a go of comfortable high-heeled shoes or a new way of using radio spectrum for cell phones.[30]

As mentioned in the Petition for Certiorari, since *Chakrabarty*, *Diehr* and *State Street Bank*, there have been numerous opportunities for Congress, under the banner of "Patent Reform" to take up and amend the standard for patentable subject matter. They easily could have established a "machine or transformation" test for method claims. They have not.[31]

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[29] Adam B. Jaffe & Joshua Lerner, *Innovation and Its Discontents: How Our Broken Patent System is Endangering Innovation and Progress, and What To Do About It* (2004).

[30] *Id.* at 200.

[31] *See also A Patent System for the 21st Century* 84 (Steven A. Merrill et al., eds., 2004) ("Apart from the very recent congressional ban on human organism patents, clearly a special case, there have been no successful legislative attempts to circumscribe patenting.").

CONCLUSION

The "machine or transformation" test is contrary to this Court's precedents, contrary to Congressional intent and comes at a time when we should be actively searching for ways to increase the incentives for all types of innovation. Certiorari should be granted so that a broad interpretation of 35 U.S.C. § 101 with respect to method claims can be reestablished.

Respectfully submitted,

Of Counsel:
J. JEFFREY HAWLEY
Director Amicus Brief Clinic
Professor of Law
ANN M. MCCRACKIN
Professor of Law
FRANKLIN PIERCE LAW CENTER
2 White Street
Concord, NH 03301
(603) 228-1541
Amicus Curiae

THOMAS G. FIELD, JR.
Counsel of Record
Professor of Law
FRANKLIN PIERCE
LAW CENTER
2 White Street
Concord, NH 03301
(603) 513-5147

APPENDIX

Student Members of the FPLC Intellectual Property Amicus Brief Clinic

Jason Condrasky

David Hardoon

Haimei Jiang

Yuliya Kleynbok

Christine Labbate

Ramani V. Marakani

Michael Whalen

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CURIAE
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SUPREME COURT, U.S.

IN THE

Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,

Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,

Respondent.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF KONINKLIJKE PHILIPS ELECTRONICS N.V. AS AMICUS CURIAE IN SUPPORT OF PETITIONERS

JACK E. HAKEN
Counsel of Record
KEVIN C. ECKER
LAURIE GATHMAN
TODD HOLMBO
PHILIPS INTELLECTUAL PROPERTY
& STANDARDS
345 Scarborough Road
Briarcliff Manor, NY 10510
(914) 945-6000

Counsel for Amicus Curiae
Koninklijke Philips Electronics N.V.

221377

COUNSEL PRESS
(800) 274-3321 • (800) 359-6859

QUESTION PRESENTED

Whether the Court of Appeals erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. § 101.

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INTEREST OF *AMICI CURIAE*[1]

Patent rights are defining assets for high technology businesses and the monetary values of patents are often used as important gating metrics for strategic investment decisions. The Court of Appeals decision abruptly upsets decades of established patent law precedents and thus undermines business valuations that were and are currently being made in reliance upon the established law. The new test for patentable subject matter which is mandated by the decision is radical, uncertain and raises many new and unanswered questions. These factors will likely chill and delay planned investments in new research and in start-up ventures which are essential to American economic recovery. This fundamental redefinition of the law is properly the province of Congress, particularly when the economic and social impact of the change will have very immediate and uncertain consequences.

Amici curiae Koninklijke Philips Electronics N.V. (aka Royal Philips Electronics N.V.) is the parent corporation of a worldwide family of companies ("Philips"). Philips has been inventing and manufacturing electronic and electrical products for over 115 years and is one of the largest users of the patent system in the United States.

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[1] No counsel for a party authored this brief in whole or in part, and no such counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than the *amicus curiae*, or its counsel made a monetary contribution intended to fund its preparation or submission.

Philips began operations as a 19th century electric lamp manufacturer and our company history is rooted in the classic patent battles of the industrial age. We are thus able to offer a unique perspective of the commercial importance of this case and its potential negative impact on the American research, manufacturing and service industries.

Last year Philips filed U.S. patent applications for more than 1,000 inventions. Scientists and engineers at our American laboratories have made pioneering advances in the fields of high efficiency lighting, medical diagnosis and imaging, high definition television, optical CD and DVD recording, and digital rights management. Philips' annual income from patent licensing activities is in excess of five hundred million dollars. In our experience, meaningful patent protection in the United States and other jurisdictions can best be achieved when the patent system provides a broad spectrum of alternative patent claim categories to assure that all unauthorized users of our inventions can be charged with acts of direct patent infringement.

Like many established companies, Philips needs to assure that our products and services will remain relevant and profitable as software and intelligent systems replace traditional electronic hardware components. Thus, Philips has recently divested much of its semiconductor and consumer electronics product lines and is investing billions of dollars to acquire promising start-up companies and technologies to build our businesses in the medical diagnostics, patient monitoring and energy-efficient lighting sectors. We are keenly interested in assuring that the U.S. patent system will provide protection with enough claim scope to deter trans-national infringers and with economic incentives for continued research in these fields.

Philips is a technology company. Very few of our patented inventions involve methods of doing or conducting business in the sense exemplified by the petitioners' hedging transactions. But the decision below also affects the patentability of technologies and it is already being applied as precedent by the Patent Office to reject patent applications for technological innovations in our traditional product lines. Thus we have grave concerns that a mandatory machine-or-transformation test for patentable subject matter will severely limit our ability to obtain effective patent protection for our concrete and tangible technical innovation.

SUMMARY OF THE ARGUMENT

The new statutory construction and restated legal principles that underlie the Court of Appeals' decision raise a host of issues and unanswered questions which will delay new investments in essential research and technologies. The decision is overreaching, works an unnecessary sea change in deep-rooted principles of patent law, and will necessitate a massive revaluation of America's intangible technology assets. This Court needs to act swiftly to review the decision and to redirect the Court of Appeals for the Federal Circuit before this unwise new course disrupts our research and business environment.

The scope and fallout of the *Bilski* decision are not limited to methods of doing business. The new test that is mandated for patentable process subject matter affects the claim language used in tens of thousands of granted patents for commercially important technology inventions. Patent owners will now need to evaluate and correct potential defects in technology process claims before they can assert, license and/or enforce their previously granted rights against infringers. The projected costs of reevaluating and correcting these unanticipated defects in existing patent portfolios are enormous and the work will take years to complete. Many patent holders will seek to reissue their patents in proceedings that will divert scarce Patent Office resources away from the already backlogged examination of new inventions.

The newly mandated machine-or-transformation test is unsound jurisprudence and contrary to long established precedents of this Court and Federal Circuit law. Statutory processes are a broad collective category that includes many more inventions than simple manufacturing methods. The principle that patentable subject matter broadly includes all of the technological arts was already firmly established in American law by the late 19th century. Processes claims are often seen as the only means to achieve effective patent protection for important inventions in the medical diagnostics, environmental control, and information science technologies. The holding below thus inherently discriminates against industry sectors. The patent statutes should be construed in an even-handed manner which is free of bias that disfavors any particular technology or industry segment. The holding also disrupts the delicate strategic balance between patent and trade secret protection which has been carefully crafted by Congress and this Court's precedents.

ARGUMENT

I. The Court of Appeals decision works an unnecessary sea change in deep-rooted principles of patent law that will necessitate a massive revaluation of technology assets and will delay new investments that are essential to economic recovery.

Circuit Judge Newman aptly reminded us that: "Stable law on which industry can rely, is a foundation of commercial advance into new products and processes. *In re Bilski*, 545 F.3d 943, 992 (Newman, J., dissenting) (Fed. Cir. 2008). An important benefit of the patent system is to establish a body of rules which apply to the exploitation of technical innovations and more particularly to the financial valuation of technology. Published patents serve as an important, often critical vehicle through which firms can credibly convey information about their inventions to observers. *See* Clarisa Long, *Patent Signals*, 69 U. Chi. L. Rev. 625 (2002). The International Chamber of Commerce (the "ICC") reports that:

> "businesses and the financial community are becoming increasingly sophisticated about the importance of evaluating intellectual property rights as a component of pre-investment due diligence, not only from a financial perspective but also from a legal perspective, concerning issues such as validity, enforceability, scope of intellectual property rights, potential revenue from infringement by others, and any potential liability from

> infringing the rights of others. As a result, such studies provide more reliable information about the financial value of intellectual property as well as information useful in setting business direction and strategy."

ICC, Current and Emerging Intellectual Property Issues for Business: A Roadmap for Business and Policymakers (Ninth Ed. 2008) at 55 http://www.iccwbo.org/uploadedFiles/ICC/intellectual_property/pages/IP_roadmap-2005(1).

The Court of Appeals for the Federal Circuit has now abruptly recast and reversed decades of well-established patent law. The decision below is a capricious, ill-conceived, admittedly incomplete and improper extension of judicial authority into the heart of legislative economic and industrial policy. This Court first addressed the patentability of processes under the 1952 Patent Act in *Gottschalk v. Benson*, 409 U.S. 63 (1972). The Court of Appeals has now discarded over thirty five years of post-*Benson* case law in favor of a mandatory, two-pronged machine-or-transformation test for patentable subject matter. But the first ("machine") prong of the Federal Circuit's new test is illusory, *Bilski*, 545 F.3d at 962 (stating ". . . issues specific to the machine implementation part of the test are not before us today. We leave to future cases the elaboration of the precise contours of the machine implementation . . ."). Without the first prong, the new test is, in substance, simply a return to the stale physical transformation tests for patentability, which were already discredited and rejected at the end of the nineteenth century.

The Court of Appeals recognized that this Court "may ultimately decide to alter or perhaps even set aside . . . [the machine-or-transformation] test to accommodate emerging technologies." *Id.* at 956. Furthermore, the Court of Appeals did not "rule out the possibility that . . . [the Court of Appeals itself] may in the future refine or augment the test or how it is applied". *Id.* The Federal Circuit has thus chosen to reject its own established system of precedents in favor of a massive, open-ended redirection of patent principles put forth by a slim majority who candidly admit a lack conviction in their own reasoning. Companies cannot tolerate additional uncertainty regarding what is patentable.[2] Patents play a key role in determining the values of innovation. In a recent survey, American R&D executives said that 60 percent of the projects that ultimately produced new discoveries would never have happened without patent protection.[3] Uncertainty about the value of the patents introduces uncertainty in determining the value of the patent owner's business.[4]

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[2] Today some two-thirds of the value of large American businesses can be traced to intangible assets that embody ideas, especially the intellectual property of patents and trademarks. *See* Robert J. Shapiro and Nam D. Pham, *Intellectual Property Intensive Manufacturing in the United States* (July 2007) available at http://www.the-value-of-ip.org/ip_report.pdf

[3] Robert J. Shapiro, *Remarks to the CSIS Forum on Intellectual Property Rights: Implications for Economic Development* (2007) available at http://www.csis.org/media/csis/event/070404_shapiroremarks.pdf

[4] Using a very conservative estimate, patents now contribute between $77.3 billion - $98.4 billion to the value of

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The projected costs of reevaluating existing United States patent portfolios in light of the *Bilski* decision are staggering and the work will take years to complete. Investors will undoubtedly shy-away from investments in research and development and acquisitions until these issues are clarified, but the American economy cannot afford to wait. This Court should grant certiorari to remove an unnecessary and untimely roadblock to American economic recovery and should promptly redirect the Court of Appeals before the uncertain expectations surrounding the effects of these new, judicially created patent policies can stall high technology investment.

II. Broad process claims are commercially necessary and they contribute significant added value to patented inventions in the new economy.

The four categories of patentable subject matter that Congress specified in § 101 "process, machine, manufacture or composition of matter" are not mutually exclusive. A patentable invention may fall into multiple categories. Thus, while each patent must be directed to a unitary invention, it is commonplace that claims which define the bounds of the very same invention can, by competent draftsmanship, be directed to a process, machine, or an article of manufacture. The inventor of

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U.S. public companies. See Scott Shane, *The Likely Adverse Effects Of An Apportionment-Centric System Of Patent Damages*. Manufacturing Alliance On Patent Policy, (2009) available at http://www.mfgpatentpolicy.org/images/Apportionment_of_Damages_Adverse_Effects_Jan14_09.pdf.

such an invention has the option as to the form that the claims in his patent will assume and there is nothing wrong with this practice. *Bandag, Inc. v. Al Bolster's Tire Stores, Inc.*, 750 F.2d 903, 922 (Fed. Cir. 1984).

Most modern patents in the electronic, computer and information processing arts include several independent claims, which together define the same invention from the viewpoints of both a process and a machine (i.e., a system). This is not just a formalism or semantics – an inventor or patent owner will receive less substantive protection from infringement if she is limited to claiming her invention as just a machine or a manufacture and is denied a right to protect the same invention with process claims.

The practice of using multiple independent claims that capture separate § 101 categories is dictated by the law of patent infringement and by the economic realities of modern, globally-distributed and networked technology. Today, goods and services are often produced by groups of technicians and service firms who collaborate and/or serially add their contributions to the finished product. However, with a few minor exceptions, a patent holder can only establish infringement by showing that a single party has practiced every element of a patent claim within the United States. Conventional machine and manufacture claims often will not reach to patent infringement in network environments where, for example, some parts of a machine which implement steps of a process may not be located within the geographic boundaries of the United States. Likewise novel and unobvious process steps that are performed within our borders may only affect articles that are overseas, in earth orbit, or beyond.[5]

The process claims which the Patent Office has heretofore allowed in the body of issued United States patents were all drafted to describe patentable inventions and relied upon the statutory construction and legal precedents that were in effect at the time that the patent rights were granted. Many of those process claims will likely fail the new, mandatory machine-or-transformation test for formal reasons: for example, because the claims' language does not expressly recite links between the process steps and a specific machines or apparatus. The patent law already provides procedures that patent owners can apply to correct formal defects by reissuing a defective patent, 35 U.S.C. § 251 or through reexamination 35 U. S. C. § 302. We expect that many owners will turn to reissue as a means to verify and assure that their claims can pass muster under the new test's mandatory criteria, before they seek to extract value from their rights by licensing or assert their patents in litigation against infringers. This Court needs to decide whether the new turn of Federal Circuit law is correct before industry embarks on this potentially wasteful undertaking.

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[5] The International Chamber of Commerce warns that "infringers are resourceful and have tried to structure their services in such a way to make it more difficult for rightsholders to enforce their rights, for example by using remote servers to avoid jurisdiction." *ICC, Current and Emerging Intellectual Property Issues for Business, supra* at 55.

III. The *Bilski* decision will spur existing patent holders to file a flurry of applications to make formal corrections of valid issued patents that will divert scarce human and economic resources, both in high technology industries and in the Patent Office.

The Court of Appeals' decision injects uncertainty into millions of issued patents that were properly granted under the former case law.[6] The very limited scope of patentable processes which the Federal Circuit's new statutory construction now affords to § 101 under this Court's decisions in *Benson* and *Parker v. Flook*, 437 U.S. 584 (1978) will force technology companies, including Philips, to undertake a comprehensive legal review of their patent portfolios. The Patent Office already takes an average of 32 months to examine and issue patent applications.[7] Patent validity studies and corrective action are time consuming and must be started years before the affected process claims can be asserted against infringers.

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[6] A query of the Patent Office on-line database indicates more than 1,235,000 of theUnited States patents granted during the seventeen year period from February 18, 1992 claimed processes. This is about 46% of the total utility patents granted. *See: http://patft.uspto.gov/netahtml/PTO/search-adv.htm.*

[7] Pendency time of an average patent application - between filing and issuance of utility, plant and reissue applications. *See: United States Patent and Trademark Office: Performance and Accountability Report Fiscal Year 2008* available at: www.uspto.goc/web/offices/com/annual/2008/0ai_05_wlt_04.html.

The unexpected financial impact of the new mandatory test for process claims on patent-centric companies like Philips will be severe. Counsel will need to 1) review entire portfolios of active issued patents; 2) determine the number of patents that contain claims for processes; 3) identify those patents that may not satisfy the new test and whether the claim defects are amenable to correction via reissue or reexamination; 4) select patents which appear likely to have commercial importance sufficient to justify the expense of a reissue patent application; 5) prepare and file requests for reissue; and 6) prosecute the reissue applications through the Patent Office examination process. Each of these steps is time consuming and fraught with uncertainty. Philips estimates that it will require in the neighborhood of twenty five thousand attorney-hours to review our portfolio of issued patents and take corrective actions to reissue process claims which are potentially defective under the new Federal Circuit test.[8] It is difficult to fund any unexpected expenses in today's economic climate, yet technology-based industry must expend this money to ensure the strength of their patent portfolios. In practical effect, monies expended to insure that an existing portfolio meets the new and as yet un-affirmed process patentability criteria will be diverted from investments that would otherwise flow into new businesses and for the development of new technologies.

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[8] During the 10 year period prior to *Bilski*, Philips and its related entities were granted more than 9200 U.S. patents and we estimate that 5500 of those patents have process claims that now need to be reviewed. We anticipate that we would select between 20 and 30 percent of the most commercially important patents for correction. The fixed Patent Office reissue application, examination and issue fees alone will cost almost five million dollars at 2009 rates.

Beyond the naked cost, there is another unanticipated problem with a mass filing of patent reissue applications. Even if only twenty percent of the issued Philips' patents with process claims have potential defects that warrant Patent Office review, we will need to prepare and file over one thousand applications for reissue. The number of applications, from our company alone, would then already exceed the maximum annual number of reissue filings that have ever been made in the United States Patent Office. When other, similarly situated companies also seek reissue patents, the average pendency of patent applications, already at a commercially unacceptable level of 32 months, will skyrocket.

In light of the expected burden on the Patent Office and associated delays in processing the onslaught of reissue applications proceedings, the unexpected and potentially unwarranted costs to patent holders and the delays imposed upon assertions of patent infringement, we urge this Court to hear this case, promptly clarify the definition of a patentable process under § 101, and inject certainty back into the patent system.

IV. A mandatory machine-or-transformation test for process patent subject matter is legally unsound.

A. The Court of Appeals disregarded this Court's instructions that § 101 must be broadly construed and ignored the plain language of § 100(b).

The legislative history surrounding patentable subject matter supports a broad construction. This Court has unequivocally cautioned against reading limitations and conditions into § 101 which the legislature has not expressed. *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980); *Diamond v. Diehr*, 450 U.S. 175, 182 (1981). This Court has also declined constructions that would narrow the scope of patentable subject matter. *J. E. M. AG Supply, Inc. d/b/a Farm Advantage Inc. v. Pioneer Hi-Bred Int'l. Inc.*, 534 U.S. 124, 145-146 (2001) (Affirming that new plant varieties are patentable subject matter and noting "in the face of [highly visible decisions supporting a broad interpretation of § 101], . . . Congress . . . failed to pass legislation indicating that it disagrees . . . As in *Chakrabarty*, we decline to narrow the reach of § 101 where Congress has given us no indication that it intends this result."). Moreover, this Court also chose not to reconsider the Federal Circuit's *State Street Bank* decision (confirming that business methods are patentable subject matter). *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 525 U.S. 1093 (1999) (denying petition for *certiorari*).

Statutory construction must begin with the language of the statute and courts are forbidden from disregarding clear expressions of Congressional intent. *Chakrabarty*, 447 U.S. at 308. The word "process" is expressly defined by Congress in the 1952 Patent Act 35 U. S. C. § 100(b): "The term process means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter or material." The Court of Appeals, however, did not give any weight to this definition in its opinion and summarily dismissed the statute as "unhelpful." *Bilski*, 545 F.3d at 951, n.3. In blatantly rejecting the definition that was expressly provided by Congress, the Court of Appeals disregarded Congress' intent that patentable subject matter under § 101 be interpreted as broadly as possible within the limits established by pre-1952 precedent.

B. The principle that patentable subject matter broadly includes all of the technological arts was already firmly established in American law by the late 19th century.

The Court of Appeals' disregard of the express statutory definition is sophistry in its purest form. The 1952 Patent Act, and more particularly the definition of a patentable "process" in § 100(b), was intended to codify the then-existing body of American patent law. The issues discussed by the Court of Appeals majority are neither new nor unique to this case and the relationship between patentable technological arts and industrial process is well documented in the classical 19th century treatises. Yet, the Court used tunnel vision to effectively bypass more than a century of well-established precedent and the concurrence even found it necessary to fall-back to pre-industrial English theories of monopoly which were already discredited by the industrial-age legal scholars.

The patentability of an art has always been recognized in the United States. Contrary to the Court of Appeals' pronouncement, the term "art" was not fully synonymous with an industrial method or series of process steps. By 1890, the patentable classification of an art was considered the "most comprehensive" of categories of patentable subject matter, which "embraced all of those [patentable inventions] which cannot embraced under one or more groups of instruments enumerated in the statutes, its outer limits are less easily discernable than any other class of operative means. *See* William C. Robinson, *The Law of Patents for Useful Inventions,* § 163-*166* (Little, Brown and Company, 1890).[9]

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[9] Late 19th century law recognized that the category of [an Art] includes (1) the application of a known force to a new object, . . . (2) the application of a new force to a new object . . . and (3) the application of a known force to known objects through known instruments used in a new manner. – An Art may be either a "Force Applied" a "Mode of Application" or the "Specific Treatment of a Specific Object". *Id.* § 164 – 165. Arts were considered patentable subject matter as long as they produced physical effects, that is: affected the character or condition of physical objects. There was no requirement that the objects had to be physically transformed. *Id.* at § 166

C. The Court of Appeals holding inherently discriminates against inventions in the computer, information science, content delivery and information science technologies.

The TRIPS Agreement provides that:

> ". . . patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application . . . patents shall be available and patent rights enjoyable without discrimination as to the place of invention, the field of technology and whether products are imported or locally produced."

Agreement on Trade-Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods, Apr. 15, 1994, Art. 27, in *Marrakesh Agreement Establishing the World Trade Organization, Annex 1C,* 33 I. L. M. 1197, 1208 (1994).

Yet a mandatory machine-or-transformation test inherently denies valuable process patent protection to service industries and manufacturers whose products are not traditional physical articles.

In 1990 almost all consumer electronic devices were implemented in separate specialized sets as combinations of hardware circuit elements. For example, televisions, VCR's and telephone answering machines were produced and marketed in separate boxes and often via different selling channels. Today those same product functions are usually implemented in software and we are moving toward a small number of common multiuse hardware platforms. Personal computers and PDA's now provide audio and video recorder functionality. Cameras, music players and television receivers are furnished as embedded features in cellular telephones. In this context, the boundary between hardware and software (*i.e.* articles and processes) becomes fuzzy. Software and firmware code effectively reconfigures hardware circuits to perform particular player or display functions that were formerly achieved in fixed circuitry. Processes that were once linked to specific, dedicated machines are now implemented on these general purpose devices.

The Patent Office is struggling with an expanding backlog of unexamined patent applications which is particularly severe for inventions in the electronics, information technology and biotechnology arts. Short product life cycles make the consumer electronics and computer industries especially vulnerable to patent processing delays: first and most obviously because many products are already obsolete before effective patent protection becomes available, but also because long application processing delays create an unfair impression that patents are being granted for well-known ideas.[10] The new Court of Appeals test thus discriminates in favor of users of hardware technology and against users of software technology.

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[10] Petitioner's argument mentions several cases in which the Patent Office Board of Appeals and Interferences (the "B. P. A. I.") has already expanded the Court of Appeals decision as a basis for rejecting article of manufacture claims for information processing systems and networks. Even more

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D. The mandatory machine-or-transformation test excludes a range of processes that were well recognized as being patentable under pre-1952 law and which Congress intended to include within the scope of the 1952 Patent Act.

Any sound test for patentability must recognize that § 101 processes are a broad category which includes all of the subject matter that was referred to as "the arts" in pre-1952 case law. Patentable processes thus should include methods (e.g., methods of testing and medical diagnosis, signal processing, energy management and control and electrical filtering, authentication and verification) which have historically been regarded as patentable arts, but do not involve manufacturing

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recently, the B. P. A. I. further relied on expanded Federal Circuit *Bilski* precedents to hold that an invention of a computerized method used by a television set-top box or video recorder (for example a Tivo® brand DVR) to display lists of recommended programs on a television set screen is unpatentable, because claimed data processing apparatus is said to be non-specific and the television programs are not "physical and tangible objects". *Ex parte Gupta*, Appeal 2008-2000, Application 10/014,202, (B. P. A. I., January 15, 2009). There is thus every indication the Patent Office will use the *Bilski* opinion as a broad-brush tool to push-back its problematic patent examination backlog onto the Court of Appeals docket at the very time when issuing patents for new inventions could act as a stimulus for our economy.

processes, or inherently produce any physical transformations of raw materials or commodities.

Methods for non-destructive testing and diagnosis are a classic example of traditionally patentable, useful arts which strive to measure and characterize the physical properties of materials and commodities without producing any physical transformation that would impair the test article. Quality assurance processes in the electronics and aerospace industries typically stress components with forces and environmental conditions beyond their expected working limits and only accept articles whose physical properties remain unchanged after the stress. Process patent claims should be available to protect these inventions against all unauthorized users without regard to the pass-fail outcome of the tests. For example, the patentability of medical diagnostic methods should not be unduly restricted to exclude instances where only patients who suffer from a rare abnormal condition manifest some physical transformation of an analytical reagent.

Methods for energy management and system control provide another relevant example of traditionally patentable arts whose intended purpose is often to maintain the physical properties of articles and materials in an unchanged, stable state by means of predictive filtering, application of negative feedback or other similar modern process technologies in the face of a potentially hostile external environment.

The Court should promptly review the decision and clarify these important issues before the Patent Office can use them as precedents to further cripple intellectual property protection for industrial and technical arts which are true backbones of the United States economy.

E. The new patentability test disrupts the delicate strategic balance between patent and trade secret protection.

The patentable subject matter precedents of this Court are designed to navigate the "opposing and risky shoals" between patent overprotection and underprotection. *Lab. Corp of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124, 127 (2006) (Stevens, J., dissenting). In contrast, the Court of Appeals' new and regressive tests for patentable methods will undermine the economic rationales for the patent system because they will deny inventors their ability to recoup fixed costs of research and development and will encourage them to keep inventions secret. *See* W. Landes and R. Posner, *The Economic Structure of Intellectual Property Law* 294 (2003).

As this Court has noted, "the federal patent system . . . embodies a carefully crafted bargain for encouraging creation and disclosure of new, useful, and non-obvious advances in technology in return for the exclusive right to practice the invention for a period of years". *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 150-51 (1989). If the Court of Appeals' new requirements are left to stand, innovators are less likely to spend research and development resources on methods for information processing, medical diagnosis, non-destructive testing and environmental control. If they do invent such technologies, they likely will keep their inventions secret. American industry will "invest more resources in maintaining trade secrecy . . . and inventive activity [will] be inefficiently biased toward inventions that can be kept secret." Landis and Posner *supra* at 328. The end result will be to "reduc[e] the stock of knowledge available to society as a whole. *Id.* at 294.

CONCLUSION

The petition for certiorari should be granted. The Court should review and reverse the decision of the Court of Appeals.

Respectfully submitted,

JACK E. HAKEN
Counsel of Record
KEVIN C. ECKER
LAURIE GATHMAN
TODD HOLMBO
PHILIPS INTELLECTUAL PROPERTY
& STANDARDS
345 Scarborough Road
Briarcliff Manor, NY 10510
(914) 945-6000

Counsel for Amicus Curiae
Koninklijke Philips Electronics N.V.

AMICUS
CURIAE
BRIEF

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IN THE

Supreme Court of the United States

BERNAD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Respondent.

On Petition for Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF *AMICUS CURIAE* MEDISTEM INC. IN SUPPORT OF THE PETITION FOR A WRIT OF CERTIORARI

ROBERT A. MATTHEWS, JR.
Counsel of Record
LATIMER, MAYBERRY &
MATTHEWS IP LAW, LLP
1750 Kraft Drive, Suite 1190
Blacksburg, VA 24060
(434) 525-1141

Attorney for Medistem Inc.

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On Petition for Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

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BRIEF OF *AMICUS CURIAE* MEDISTEM, INC. IN SUPPORT OF THE PETITION FOR A WRIT OF CERTIORARI

INTEREST OF *AMICUS CURIAE* [1]

Amici curiae, Medistem Inc., respectfully submits this brief in support of petitioners, Bernard L. Bilski and Rand A. Warsaw, urging the grant of the petition for a writ of certiorari to review the judgment of the United States Court of Appeals for the Federal Circuit in *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (*en banc*). Specifically, Medistem urges the Court to grant the petition and address the first question presented in the petition: Did the Federal Circuit err in holding that, to be eligible for a patent, a "process" *must* be tied to a particular machine or transform a particular article into a different state or thing?

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[1] Counsel for both parties have consented to the filing of this brief. Petitioner has filed a written consent for all amicus curiae briefs in support of either or neither party. Respondent's letter giving its written consent for Medistem Inc. to file this brief is on file with the Court. Counsel of record for all parties received notice at least 10 days prior to the due date of the amicus curiae's intention to file this brief. No counsel for any party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person or entity, other than *amicus curiae*, its members, or its counsel, made a monetary contribution to its preparation or submission.

An innovative biotechnology company, Medistem dedicates its business pursuits to research and development of regenerative medicine products in the area of adult stem cells. Through licensees/collaborators, the company has clinically implemented numerous stem cell therapies for treating debilitating conditions ranging from peripheral artery diseases, to autoimmune conditions, to neurodegenerative states. Medistem's platform technology, a novel stem cell type termed the "endometrial regenerative cell," falls under conventional patentable subject matter. The company also has many pending patent applications seeking to protect new methods it has developed to diagnose causes of diseases and methods to use stem cells in effectively treating those diseases and other medical maladies.

Entering into a new and previously unimaginable era of biotechnology, Medistem works on discoveries associated with predictive tests based on an individual's own genetic make-up, physical changes during development, and condition of disease. Previously, drug development focused on a "one size fits all" approach due, in large part, to technology's inability to rapidly screen patients for specific interhuman variability. With the tremendous knowledge gained from the human genome project, and the geometrical rise in methods of detecting genes, gene expression, proteins, and small molecules, technology has given the field new ways of understanding a patient's unique medical "fingerprint." With this knowledge, biotech companies, such as Medistem, are developing new methods of diagnosing causes of illnesses and effecting treatment on an individualized patient basis.

Like many biotech companies, Medistem relies on the ability to obtain enforceable patent protection for the results of its research and development efforts. Having patent protection allows Medistem to obtain investment capital to fund its research and development efforts. The Federal Circuit's limiting the scope of patentable subject matter for "process" inventions in *Bilski* casts a cloud of uncertainty as to whether Medistem and other biotech companies can continue to protect with patents their inventions relating to methods of diagnosing causes of diseases and methods of selecting beneficial treatment protocols. Medistem fears that should biotech companies lose the ability to obtain enforceable patent protection on diagnostic and treatment methods, the ability to attract investment capital will sharply decline, and as a direct result the incentive to search for better ways to diagnose causes of diseases and find more effective treatments will decline. Medistem is not alone in its view. Addressing this issue in his dissent from the *en banc* court's opinion, Circuit Judge Rader cogently noted that excluding patent protection for methods of using discovered biological or physiological correlations will "undermine and discourage future research for diagnostic tools." *Bilski,* 545 F.3d at 1014. The advances in the diagnostic arts noted above and the industry's reliance on the patent system's economic incentives to fund the efforts to make these advances show that Judge Rader's concerns should not be taken lightly.

The question of whether potentially life-saving diagnostic methods or treatments should be ineligible for patent protection if they are not tied to a particular machine or apparatus, or do not transform a particular article into a different state or thing, has great importance to our citizens. Medistem fears that due to its *en banc* status, the Federal Circuit's pronouncement in *Bilski* will be the *de facto* final word on the standard for determining the scope of patent eligible subject matter for all processes. This appears untenable in view of Circuit Judge Newman's detailed analysis of how the *Bilski* majority's new standard adopts a narrow view of patent eligibility for process inventions previously rejected by this Court. *See Bilski*, 545 F.3d at 978-85 (Newman, J., *dissenting*). Consequently, this Court's intervention is needed to correct the overly restrictive test the Federal Circuit adopted to solve the problem of identifying when a patent claims something that is a law of nature, and therefore unpatentable, compared to when it claims "a product of human ingenuity" that is eligible for patent protection. *See Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980).

REASONS FOR GRANTING THE PETITION

I. BECAUSE *BILSKI'S* "MACHINE OR TRANSFORMATION" TEST AFFECTS THE SCOPE OF PATENT ELIGIBILITY FOR *ALL* PROCESS-RELATED INVENTIONS, IT RAISES A QUESTION OF FUNDAMENTAL IMPORTANCE TO THE PATENT SYSTEM.

As Petitioners correctly state, the scope of subject matter eligible for patent protection presents the most "fundamental question" of patent law. Accordingly, any judicial rule impacting what an inventor can patent has significant importance to the patent system at the system's most rudimentary level.

Although the patent at issue in *Bilski* claimed a business method, the Federal Circuit did not confine its adoption of the "machine-or-transformation" test to business methods. Instead, the court more broadly considered "what test or set of criteria governs the determination by the Patent and Trademark Office ('PTO') or courts as to whether *a claim to a process* is patentable under § 101 or, conversely, is drawn to unpatentable subject matter because it claims only a fundamental principle." 545 F.3d at 952 (emphasis added). It answered that question by holding that "the machine-or-transformation test is the *only* applicable test and *must* be applied . . . when evaluating the patent-eligibility of process claims." *Id.* at 964 (emphasis added). Thus, its ruling appears to apply to all process claims of all issued patents and all pending patent applications.

The policy decision made by the Federal Circuit narrows the scope of subject matter eligible for patent protection for the entire category of "process" patents including patents relating to biotechnology. Narrowing the scope of patentable subject matter forces innovators to use other means of protecting their inventions, such as maintaining the invention as a trade secret. While trade secret protection provides some measure of value to society, *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 493 (1974), it does not achieve the full, prompt and wide-spread public disclosure of the invention that the patent system provides. *See* 35 U.S.C. §§ 112 (invention disclosure requirements); 122(b) (patent applications published 18 months after filing), and 153 (issued patents recorded in the PTO). By definition a trade secret keeps the invention secret. It retards innovation since knowledge of the invention, how to make it, and how to use it, remains suppressed and concealed. In contrast, the disclosure of an invention as part of obtaining a patent gives the public full knowledge of the invention, and thereby allows other innovators to improve upon the invention. *See Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 146 (1989) ("[T]he federal patent laws have embodied a careful balance between the need to promote innovation and the recognition that imitation and refinement through imitation are both necessary to invention itself and the very lifeblood of a competitive economy."). Further, patent law provides a more powerful enforcement right than trade secret law. *Kewanee Oil*, 416 U.S. at 489-90 (noting that trade secret law provides "far weaker protection" than patent law, and where "patent law acts as a barrier, trade secret law functions relatively as a sieve."). This allows companies and investors in companies to justify significant financial investment to develop new patentable technology since they can expect they will have the ability to protect the developed technology and later reap rewards in the market.[2] A judicial narrowing of the scope of patent eligible subject matter will likely have significant adverse impact in the amount of economic investment made to support developing new technologies, and correspondingly a reduction in the amount of innovation, as investors will choose to invest elsewhere. Echoing this conclusion, Circuit Judge Rader stated his view that the majority's ruling in *Bilski* "inadvertently advises investors that they should divert their unprotectable investments away from the discovery of 'scientific relationships' within the body that diagnose breast cancer or Lou Gehrig's disease or Parkinson's or whatever." *Bilski,* 545 F.3d at 1014 (Rader, J., *dissenting*).

II. AS THE EXCLUSIVE TEST FOR DETERMINING PATENT ELIGIBILITY, BILSKI'S "MACHINE-OR-TRANSFORMATION" TEST CONFLICTS WITH THIS COURT'S PRECEDENTS AND FAILS TO REALIZE CONGRESS'S INTENT

Rejecting an argument that only processes involving "chemical action" were patent eligible, and therefore methods effected by "mere mechanical combinations" were ineligible for patent protection, this Court explained that "it is not the province of the courts to so limit the statute as to deprive meritorious inventors of its benefits." *Expanded*

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[2] A recent report on venture capital investment, shows that in the fourth quarter of 2008 the biotech industry obtained approximately 19% of all venture capital invested during that time among seventeen different industries. *See* PriceWaterHouseCoopers, *MoneyTree Report*, available at https:// www.pwcmoneytree.com.

Metal Co. v. Bradford, 214 U.S. 366, 382 (1909). Instead, "[a]n examination of the extent of the right to process patents requires consideration of the object and purpose of the Congress in exercising the constitutional power to protect, for a limited period, meritorious inventions or discoveries." *Id.*

The Federal Circuit majority's ruling that "the machine-or-transformation test is the only applicable test and must be applied . . . when evaluating the patent-eligibility of process claims," ***Bilski***, 545 F.3d at 964, fails this directive. The narrow and rigid definition of patent-eligible processes alarmingly threatens to exclude potentially life-saving diagnostic and treatment inventions from patent-eligible subject matter. *See e.g.*, U.S. Patent No. 7,348,149 (methods of diagnosing Parkinson's disease); U.S. Patent Nos. 6,355,623 and 6,680,302 (methods of treating IBD/Crohn's disease).[3] The Federal Circuit has already summarily applied ***Bilski*** in a two sentence opinion to affirm a summary judgment holding claims to an immunization schedule invalid under 35 U.S.C. § 101. *E.g.*, *Classen Immunotherapies, Inc. v. Biogen IDEC*, No. 2006-1634, -1649, 2008 WL 5273107, *1 (Fed. Cir. Dec. 19, 2008) (*nonprecedential*), *en banc reh'g denied* (Fed. 9, 2009), *aff'g*, No. WDQ-04-2607, 2006 WL 6161856, *5 (D. Md. Aug. 16, 2006).

Like the rejected contention in *Expanded Metal*, *Bilski*'s exclusive "machine-or-transformation" test (with its gloss of discounting the presence of

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[3] These two patents are the subject of *Prometheus Labs., Inc. v. Mayo Collaborative Serv.*, an appeal that the Federal Circuit stayed while deciding *Bilski*. No. 2008-1403 (Fed. Cir. July 29, 2008), *underlying decision*, 04cv1200 JAH (RBB), 2008 WL 878910 (S.D. Cal. Mar. 28, 2008).

"insignificant extra-solution activity" performed by machines, 545 F.3d at 957 n.14) has the capacity to exclude from patent protection a whole category of inventions without properly accounting for Congress's stated intent to permit patent eligibility for "anything under the sun that is made by man." *Chakrabarty*, 447 U.S.at 309. *See also J.E.M. AG Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124, 135 (2001) (§ 101 is "a dynamic provision designed to encompass new and unforeseen inventions."). The test also appears directly contrary to the guidance this Court gave in *Gottschalk v. Benson*:

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing.' We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.

409 U.S. 63, 71 (1972). *Accord Bilski*, 545 F.3d at 978-85 (Newman, J., *dissenting*) (detailing why the *Bilski* "machine-or-transformation" test conflicts with Supreme Court precedent).

When this Court held product claims to an aggregation of several types of naturally occurring bacteria unpatentable as claiming something that lacked "invention," in *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, it left open "the question whether the *methods* of selecting and testing the non-inhibitive strains are patentable." *Id.* 333 U.S. 127, 130 (1948) (emphasis added). Methods of "selecting" biological materials to use in treatment protocols to effect a therapy are often products of human ingenuity. They *apply* principles of nature. Although such a method may not be tied to a particular machine or apparatus, and may not transform an article from one state to another, it can be a "new and useful process" under 35 U.S.C. § 101. *See Bilski,* 545 F.3d at 1014 (Rader, J., *dissenting*) (noting that a method that applies a discovered biological relationship in a diagnostic test for potentially fatal conditions in patients is a human invention that produces a useful, tangible, and concrete result).

This Court has consistently recognized that an "application of the law of nature to a new and useful end," falls within the scope of patentable subject matter. *Funk Bros.*, 33 U.S. at 130. *Accord Diamond v. Diehr*, 450 U.S. 175, 187 & n.11 (1981) (noting that "the same principle applies to a process claim"); *Parker v. Flook*, 437 U.S. 584, 594 (1978) ("Even though a phenomenon of nature or mathematical formula may be well known, an inventive application of the principle may be patented. Conversely, the discovery of such a phenomenon cannot support a patent unless there is some other inventive concept in its application."). Based on a quasi-bright[4] line rule on whether a process is "tied" to a machine or "transforms" matter, *Bilski*'s exclusive "machine-or-transformation" test threatens to exclude process inventions from patent eligibility that apply, but do not claim, laws of nature without permitting the invention to be considered on its individual merits for whether it meets the statutory requirement of being a "new and useful process."

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[4] Circuit Judges Rader, Newman and Mayer each noted in their separate dissents, that aspects of the majority's "machine-or-transformation" test raise questions on how to apply the test in practice. 545 F.3d at 994-95 (Newman, J. *dissenting*); 545 F.3d at 1010 (Mayer, J. *dissenting*); 545 F.3d at 1015 (Rader, J. *dissenting*).

Our patent system exists "to encourage innovation and its fruits: new jobs and new industries, new consumer goods and trade benefits." *Paulik v. Rizkalla,* 760 F.2d 1270, 1276 (Fed. Cir. 1985) (*en banc*). If unchecked, *Bilski*'s test has the potential of creating a disincentive to innovate in the biotechnology industry, and particularly in the area of diagnostic and treatment methods, and the emerging field of "personalized medicine." This runs counter to the accepted view that: "A strong intellectual property system is necessary to stimulate investment in innovation. It is essential that government patent systems offer protection for innovations relating to personalized medicine, as well as high quality patent examination that allows patents of appropriate scope and quality."[5]

III. WITHOUT THIS COURT'S REVIEW, *BILSKI*'S "MACHINE-OR-TRANSFORMATION" TEST WILL BE THE LAW OF THE LAND

Since *Bilski* is an *en banc* opinion, all subsequent three-judge panels of the Federal Circuit must follow it.[6] *Kingsdown Med. Consultants, Ltd. v. Hollister*

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[5] Public policy statement on intellectual property of the Personalized Medicine Coalition (PMC), available at http://www.personalizedmedicinecoalition.org/sciencepolicy/public-policy_intellectual-property.php. The PMC describes itself as a non-profit group that works to advance the understanding and adoption of personalized medicine for the ultimate benefit of patients. Its members and partners include a wide range of federal government agencies, academic institutions, trade associations, large and small companies, venture capital firms, health insurance companies, and strategic partners. http://www.personalizedmedicinecoalition.org/about/pmc_memb-ers.php.

[6] The Federal Circuit has exclusive jurisdiction over practically all appeals from the district courts where the action arose

Inc., 863 F.2d 867, 876, n.16 (Fed. Cir. 1988) (*en banc*) ("precedent may not be changed by a panel"). Only this Court, an Act of Congress, or a subsequent *en banc* panel of the Federal Circuit can alter the ruling. *See South Corp. v. United States*, 690 F.2d 1368, 1370 n.2 (Fed. Cir. 1982) (*en banc*). Consequently, while future court opinions may have latitude to further refine the "machine-or-transformation" test, absent action by this Court, Congress, or a subsequent *en banc* panel of the Federal Circuit,[7] no district court, three-judge panel of the Federal Circuit, or the PTO can refuse to apply the "machine-or-transformation" test as the *exclusive* test for assessing patent eligibility for process inventions. Nothing is left to percolate up from within the Federal Circuit on whether new and useful processes created by human ingenuity should merit patent protection if they don't meet the "machine-or-transformation" test.

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under the Patent Act. 28 U.S.C. § 1295(a)(1). *But cf. Holmes Gp., Inc. v. Vorando Air Circulation Sys., Inc.*, 535 U.S. 826 (2002). It also has exclusive jurisdiction for all appeals from the PTO's Board of Patent Appeals and Interferences. 28 U.S.C. § 1295(a)(4)(A).

[7] The Federal Circuit's last *en banc* consideration of patent eligible subject matter came fifteen years ago in *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994) (*en banc*).

CONCLUSION

For all the foregoing reasons, the petition for writ of certiorari should be granted.

Respectfully submitted,

ROBERT A. MATTHEWS, JR.
Counsel of Record
LATIMER, MAYBERRY &
MATTHEWS IP LAW, LLP
1750 Kraft Drive, Suite 1190
Blacksburg, VA 24060
(434) 525-1141

Attorney for Medistem Inc.

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Respondent.

On a Writ of Certiorari to the United States
Court of Appeals for the Federal Circuit

BRIEF OF JOHN P. SUTTON AMICUS CURIAE SUPPORTING PETITIONERS

JOHN P. SUTTON
Attorney at Law
2421 Pierce Street
San Francisco, CA 94115-1131
Pro se

80437 33

QUESTION PRESENTED

Amicus curiae urges grant of the petition to address a different question:

Is the claimed commodity trading process:

(1) a useful art practiced by artisans who are to be encouraged in their work to promote progress in the useful arts by securing exclusive rights to their discoveries? or

(2) a commercial transaction not deserving of a government grant of exclusive right?

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INTRODUCTION

John P. Sutton respectfully submits this amicus brief in support of Petitioners to present the position that commodity trading is not a "useful art" that was contemplated to be promoted by the Constitution.

INTEREST OF THE AMICUS CURIAE[1]

John P. Sutton is a practicing patent lawyer. He began his patent career as an Examiner in the Patent Office in 1956. He briefed and argued for appellant the case of *In re Tarczy-Hornoch*, 397 F.2d 856 (C.C.P.A 1968). That case involved both a method of counting pulses and an apparatus for carrying out the method. The Patent Office rejected some of the method claims on the ground that the method was the "function of the apparatus," and not patentable subject matter. In *Tarcy-Hornoch*, he argued that 35 U.S.C. § 101 allows patents for processes as well as machines, and no Supreme Court case forbids claims to both in a patent. From 1901 to 1968, lower court decisions had prohibited both process and apparatus claims in a single application where the process was the operation of the machine. The CCPA agreed with appellant's argument and overruled the precedents barring process claims that define a "process or method of a mechanical nature, not absolutely dependent upon a machine, although perhaps best illustrated by mechanism, may, if new and useful, be the proper subject of a patent, even though it involves no chemical or other elemental action" 397 F.2d at 862–863.

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[1] Consistent with Rule 37.6, this brief is not authored in whole or in part by counsel for any party. No person other than amicus has made a monetary contribution to the preparation or submission of this brief. Petitioner has consented to all briefs *amicus curiae*.

SUMMARY OF ARGUMENT

The Bilski method is nothing more than commodity trading in an exchange, part of commerce, as carried out for millennia. It is not the work of an artisan having special knowledge and skill and deserving of a reward for promoting the progress of the useful arts. Congress may secure rights to inventors. Congress may also regulate commerce. The two are different.

Processes do work. "Art" is the work of an artisan. The work is not confined to the operation of a machine or chemical transformation to a different state or thing. Processes may be the application of a law or principle of nature, but the law or principle is not itself patentable subject matter.

The Court's precedents show that processes are not confined to the narrow examples held to be the "definitive test" by the Court of Appeals. The Court of Appeals has also ignored its own controlling precedent on what constitutes a patentable process.

The petition should be granted to clarify the law, but not to make commodity trading into patentable subject matter.

ARGUMENT

Petitioners, inventors of a "method of managing" risk were denied a patent on their process having three steps: (1) initiating transactions between a commodity provider (a middleman) and a consumer (buyer) of the commodity at a fixed rate based on historical averages; (2) identifying other market participants (sellers) having "a counter-risk position to said consumers" and (3) initiating transactions between the commodity provider (middleman) and "market participants" (sellers) at a second fixed rate in order to "balance the risk" for buyers and sellers. It works this way: one or more middlemen (presumably those authorized to use the process) hedges the risk of price fluctuation for both buyers and sellers by buying the commodity at a price the seller can live with and selling the commodity to a buyer at a price the buyer can live with. The middleman (or middlemen) can profit if the buyer pays more than the seller demands.

Commodity trading has been carried on in exchanges around the world throughout recorded history. An "exchange" is defined in Webster's' Third New International Dictionary (1968) as "1: the act of giving or taking one thing in return for another as if equivalent: as . . . b: the process of reciprocal transfer of ownership (as between persons): TRADE, BARTER . . . c: a mutual grant under the law of equal interests one being in consideration of the other."

The steps of initiating transactions with consumers of a commodity, identifying sellers of the commodity, and initiating transactions with sellers is not the work of an artisan.

The commodity example used by the Court of Appeals (at 949-50) is: "coal power plants (i.e. the 'consumers') purchase coal to produce electricity and are averse to the risk of a spike in demand for coal since such a spike would increase the price and their costs. Conversely, coal mining companies (i.e. the 'market participants') are averse to the risk of a sudden drop in demand for coal since such a drop would reduce their sales and depress prices. The claimed method envisions an intermediary, the 'commodity provider,' that sells coal to the power plants at a fixed price, thus isolating the power plants from the possibility of a spike in demand increasing the price of coal above the fixed price. The same provider buys coal from mining companies at a second fixed price; thereby isolating the mining companies from the possibility of a drop in demand would lower prices below that fixed price."

In short, the invention uses the fundamental market goal: buy low; sell high. The Federal Circuit description is incomplete in reciting that "the same provider" is the middleman for both buyer and seller. In fact, when options are used, the "same provider" rarely deals with both buyer and seller. Any commodity trader can try to manipulate the market to advantage, buying or selling options, hoping that the selling price exceeds the purchase price. Nothing in the claim recites that the trader buys low and sells high, which is essential for the process to work in the intended manner. If the trader buys high and sells low, the process does not work as intended.

Another example of this invention, not disclosed in the Federal Circuit opinion, has been carried out with the commodity of home mortgages, which has resulted in the near collapse of the world economy in recent times. In the home mortgage embodiment, a lending institution makes a loan to a homebuyer, a "consumer" (perhaps having insufficient income to be able to afford the home). The lending institution assigns the loan to a packager of many home loans (middleman), who sells large numbers of packaged home loans as securities to buyers of highly rated securities all over the world. Instead of "the same provider" in the Bilski invention as described by the Court of Appeals, many middlemen are involved in the invention as practiced with home loans: insurers, bond traders, option traders, derivative salesmen, rating agencies, and others, each receiving a cut of the action. Congress has not chosen to regulate this commerce.

So long as the bubble continues to grow, everything is fine. But if the price paid by the middleman to the supplier (coal companies in the Federal Circuit example) exceeds the price the power companies are willing to pay, the middleman suffers (buys high and sells low), as short-sellers of petroleum commodities realized when a barrel of oil went from $147 per barrel to under $50.

A serious question arises as to whether manipulating markets is contemplated as among the "useful arts" in the patent law sense. The Constitution (U.S. Const. art. I, § 8, cl. 8) limits the discoveries that may be secured to inventors to those that promote progress in the "useful arts." According to the Oxford English Dictionary, "art" is a noun derived from Middle English meaning skill as the result of knowledge and practice, specifically, technical or professional skill in humans, as opposed to nature. What evidence is there that commodity trading is a "useful art"? Exchanges have existed since biblical times, seeking to buy low and sell high. Such commerce preceded patents for inventions by millennia, not merely by centuries.

When the former English colonies in America declared independence and formed a new government at the end of the Eighteenth Century, the idea of a reward for artisans promoting progress of the useful arts by disclosing their discoveries was so important to the development of the new country that framers of the Constitution, a supremely egalitarian document, recognized only two groups, authors and inventors, for special reward and recognition by securing rights not granted to any other persons.

The United States is the only country of the world providing for patent law in the Constitution to encourage the exertions of artisans that resulted in useful arts. The Constitution does not use the word "reward," but this Court made it pellucid that reward was the intent. *Grant v. Raymond,* 31 U.S. 218, 242 (1832): a patent "is the reward stipulated for the advantages derived by the public for the exertions of the individual, and is intended as a stimulus to those exertions."

Whatever example is used to describe the context in which the Bilski invention is used, it is simply a process of commercial transactions whereby a trader attempts to buy low and sell high to return a profit. It is a process of commerce, not "useful arts." Traders are not artisans practicing useful arts to promote progress. Rather, traders have no special knowledge or skill set to realize that buy low, sell high equals profit, and buy high and sell low equals loss. The claimed process specifies neither profit nor loss, raising doubt about its usefulness.

The difference between "useful arts" and "commerce" is illustrated by their Constitutional roots. Congress was given the power to promote the "useful arts" in article I, § 8, cl. 8. Commodity trading falls within "commerce with foreign Nations, and among the several States," the regulation of which was given to Congress in article I, § 8, cl. 3. If "commerce" were contemplated as a "useful art," the Constitution would have been written differently.

The verbs describing the three steps in Bilski's claim 1, "initiating" a first set of transactions with "consumers" (buyers), "identifying market participants" (sellers), and "initiating" transactions between traders and sellers, do not tell how the invention works. Nor do they specify how the provider can buy low and sell high simply by performing these three steps. These steps are not "useful art" under 35 U.S.C. §101. Rather they are an abstract idea, mathematical formula or product of nature, which is not patentable.

Hedging risk is not an invention "which may include anything under the sun that is made by man" (Testimony of Federico, hearings on H.R. 3760, 82d Cong. 1st Sess., 37 (1951), quoted in *Diamond v. Chakrabarty*, 447 U.S. 303, 309, n. 6 (1980). Rather, the cycle up and down of markets for commodities, for stocks, or for home mortgages is not made by man; it is a natural principle of commerce. If the trader buys high and sells low in the down cycle, his method is not "useful" and he may be wiped out.

A "commodity provider" is not an artisan. An artisan's work is his art. If the art is a "new and useful process," it may be patented (35 U.S.C. § 101). What art does the commodity provider practice? What work does the commodity trading method do? What does the method make or achieve? What is the application of the principle "buy low; sell high" defined by the Bilski "method"? Does Bilski deserve a patent for initiating transactions with buyers, identifying sellers, and initiating transactions between commodity providers and sellers when the process results in loss in a down market?

A market cycle is "no more than the discovery of some of the handiwork of nature and hence is not patentable" (*Funk Bros Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 131 (1948). "Handiwork" was used metaphorically there, since nature does not do work by hand, but the message of *Funk Bros.* is clear: selecting "mutually non-inhibitive strains of different species of bacteria of the genus Rhizobium" (claim 4 at 128, n. 1) is not patentable subject matter. Each of the species of bacteria "infects the same group of leguminous plants which it always infected. No species acquires a different use. The combination of species produces no new bacteria, no change in the six species of bacteria, and no enlargement of the range of their utility. Each species has the same effect it always had. The species perform in their natural way. Their use in combination does not improve in any way their natural functioning. They serve the ends nature originally provided and act quite independently of any effort of the patentee." This lengthy quote from *Funk Bros.* should govern the analysis of this case.

Funk Bros. involved both product claims and process claims (at 128, n.1, n.2), so the reluctance of the Court of Appeals to consider cases relating to "manufacture" in determining patentable subject matter under § 101 is unfounded (545 F. 3d at 951, n. 3). The important point is that "process" or "art" is the only category of patentable subject matter dealing with intangible steps in work, as contrasted to "machine, manufacture, or composition of matter," which are tangible things. Steps in a process are described by verbs, whereas elements of a machine, a manufacture, or a composition of matter are described with nouns. Nouns tell what the invention is; verbs tell what it does. What the invention does is how it works.

The *Funk Bros.* passage just quoted uses the verb "work" in the metaphor "handiwork of nature." The verbs "*infects*," "*acquires* a different use," "*produces* no new bacteria, no *change* in the six species, and no *enlargement of the range* of their utility," each "species *has the same effect*," "*perform*," "*improve* in any way their natural functioning," "*serve* the ends of nature" and "*act* quite independently" all suggest the work of an intangible process rather than a manufactured product.

In the last analysis, the goal of a "process" is to describe how the invention works, not what it is. Because so much of our patent law is derived from English Common Law, it is appropriate to look to the Oxford English Dictionary for derivation of "process" (the term used in the 1952 patent act) and "art" (the term used in the 1793 patent act). The verb "work," derived from Old English, has many meanings, e.g. "1 Do, perform, practice;" "2 Carry out or execute;" "3 Produce (as) by labor or exertion, make, construct . . ." "5 Produce as a result, bring about, cause; accomplish, achieve;" "Do something to, influence, affect;" "8a Cause to be in, bring into, a specified state . . . ;" "b Make (up), compound, or shape . . .;" and many others.

Comparing these verbs from O.E.D. definitions with the verbs used in *Funk Bros.*, it becomes clear that "work" is the operative word in a process. "Handiwork of nature" is simply a species of work, and *Funk Bros.* hit the nail on the head in stating that the work of nature, whether it is bacteria that perform functions, a mathematical formula or an algorithm for calculation, or performing tasks of nature unaided by man, cannot be patentable subject matter.

The authorities cited by the Court of Appeals in this case confirm that verbs meaning "work" point to intangible "processes," not tangible machines, manufactures or compositions of matter. Thus, this Court's decision in *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972), was cited below for the proposition that "basic tools of scientific and technological *work*" are not patentable (545 F. 3d at 952, emphasis added). The quote from *Benson* is repeated in

Parker v. Flook, 437 U.S. 584, 589 (1978). Likewise, *Flook* had its own reference to "the chemical processes at *work*" (at 586, emphasis added). This phrase using the term "work" is repeated in *Diamond v. Diehr*, 450 U.S. 175 (1981).

Brenner v. Manson, 383 U.S. 519 (1966) involved a patent application claiming a process for making a chemical compound that was the subject of a patent already granted. Manson neglected to allege any use for the process claimed in his application, unlike the inventor of the earlier patent. Manson claimed that the compound was known, having been described in the prior patent, and all he was doing was claiming a process for making a known compound. The CCPA agreed with Manson and reversed the Board. This Court vacated the CCPA judgment because the failure to allege any use for the drug was fatal to the application to patent the process of making the product. "Is a chemical process 'useful' within the meaning of § 101 either (1) because it *works*—i.e., produces the intended product? or (2) because the compound yielded belongs to a class of compounds now the subject of serious scientific investigation?" (383 U.S. at 532, emphasis added). This Court suggested that a process under § 101 "works," but the work of the artisan must be "useful." Work to make a useless compound is not a patentable process. Commodity trading is not work: it is commerce. But if it were "work," it would be useless if the trader sells to the consumer for less than he paid to the seller.

Diamond v. Chakrabarty, 447 U.S. 303 (1980), repeated that the "laws of nature, physical phenomena, and abstract ideas have been held not patentable," citing *Gottschalk v. Benson*, 409 U.S. 63 (1972), *Parker v. Flook*, 437 U.S. 584 (1978), and *Funk Bros.* In addition, *Hartranft v. Weigman*, 121 U.S. 609 (1887) and *American Fruit Growers, Inc. v. Brogdex Co.*, 283 U.S. 1 (1931) were cited to show that products of nature were not articles of manufacture.

It is clear from *Chakrabarty* that products of nature may not be patented either as processes or as manufactures in the § 101 categories of patentable subject matter. The bacterium in *Chakrabarty* was not a product of nature. It was created by man and was unlike any other bacteria. Nature did not originally provide the bacteria with the capability to treat oil spills. In short, the bacteria had a different name, character and use than any other bacteria, and "is patentable subject matter under § 101" (447 U.S. at 310).

Diamond v. Diehr, 450 U.S. 175 (1981) followed *Chakrabarty* in supporting *Benson*, *Flook*, *Funk Bros.* and other precedents as accurately stating the law. It added to the array of precedents in support of the "commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection" the case of *Eibel Process Co. v. Minnesota & Ontario Paper Co.*, 261 U.S. 45 (1923) (450 U.S. at 188, emphasis present).

Eibel Process involved a "process" in which "a new principle of operation" was used to "cause the [paper] stock to travel by gravity at a velocity approximately equal to the speed of the [paper]making wire" (261 U.S. at 57). The pitch of the Fourdrinier wire was key to the invention. Eibel was able to "add to the former speed of the [paper-making] stock [flowing through the machine] by substantially tilting up the wire and giving the stock the added force of the down hill flow" to "maintain equality of speed between stock and wire at the crucial point, and prevent disturbance and rippling there" to make a superior product (at 52). The commercial success of the invention "spread, to use the expression of one witness, like wild fire" (at 55).

Eibel did not invent the manufacture or composition of matter we know as "paper." He did not invent the Fourdrinier "machine" for making paper. He did not even invent the "process" of making paper or transforming paper into a different state or thing. Eibel invented the "new principle of operation," making the machine work faster than before. It "worked" better by avoiding rippling caused by different speeds of the moving wire and the stock the wire was working on. "Operating" the machine at a faster speed was possible by matching the velocity of the flow of stock to that of the wire. This is a "process" step, not a tangible thing, like a manufacture, a machine, or a composition of matter.

The Court of Appeals here concluded that this Court has laid down a "definitive test to determine whether a process claim is tailored narrowly enough to encompass only a particular application of a fundamental principle rather than to preempt the principle. A claimed process is surely patent-eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing. See Benson, 409 U.S. at 70" (545 F. 3d at 954). *Benson* did not lay down a definitive test; it merely identified clues to patent eligibility.

A "principle" is not a "process"; it is a law of nature. An "application" of a principle may be an "operation" (process), or it may be a different device (machine), product (manufacture) or compound (composition of matter). It is a mistake to assume that a process must be tied either to a particular machine or a transformation of product or composition. Rather, a "process" is work, an intangible result, not a thing, which is a tangible result.

Petitioners correctly point out at 17 that this Court expressly said in *Benson*, "We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents," and that the thought was echoed in *Flook*. Petitioners did not cite *Eibel Process*, cited in *Diehr* as applicable law (450 U.S. at 188). The law of gravity clearly is law of nature that is not tied to a particular machine. Gravity increases the speed of paper-making stock flowing downhill in the *Eibel Process*. Although the Fourdrinier machine in *Eibel Process* provides the context in which the law of gravity operates to increase velocity, the law of gravity is not tied to the Fourdrinier machine.

A more fundamental issue with the "definitive test" the Court of Appeals gleaned from *Benson* and *Diehr* is the difference between nouns and verbs. Nouns represent things. In patent law, "machine," "manufacture," and "composition of matter" are things represented by nouns. A "process," on the other hand, does work; it performs, executes, produces, makes, constructs, achieves (e.g. increased velocity), affects, shapes, etc., as the verbs in the O.E.D. definitions of "work" instruct. The Federal Circuit test is limited to "transformation" and "machine," which are much too confining nouns for describing work accomplished by processes. A "transformation" is a noun, as is a "machine." Even substituting the verb "transforming" for "transformation" is too confining, since transforming is merely one kind of work that processes can do. It is error to ask a noun to do a verb's work.

To make sense of the first category of patentable subject matter in § 101, one must address the difference between work and things. Processes are intangible; machines, manufactures and compositions of matter are things. *Eibel Process* teaches that making paper faster is economically valuable and commercially successful. The *process* works better. The *machine* is the same, and the slightly different configuration of the pitch of the wire does not make it a newer, more useful or nonobvious machine. It is still a Fourdrinier machine, still making paper, only faster. It is the *process* that is the invention in *Eibel Process*, not the machine or any transformation.

By taking *dicta* from *Benson* and *Diehr* as the "definitive test," the Federal Circuit "transformed" what was expressly not a holding into a rejection of the consistent discussions of § 101 in *Manson*, *Benson*, *Flook*, *Chakrabarty* and *Diehr*. This transformation makes § 101 into a confining strait-jacket. It ignores the fact that this Court has "more than once cautioned that 'courts "should not read into the patent laws limitations and conditions which the legislature has not expressed" (*Diehr* at 182, quoting *Chakrabarty* and *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 199 (1933)). The Court of Appeals noted that the "statute does not itself explicitly mention machine implementation or transformation" (545 F. 3d at 956, n. 11). It is not the duty of the Court of Appeals to rewrite the statute in order to "explicitly mention machine implementation or transformation." "Machine implementation" and "transformation" are nothing more than "helpful insights" into the kinds of context where processes may be used. The TSM test is a "helpful insight" in the determination of obviousness, but the "obviousness analysis cannot be confined by formalistic conception" *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007)

By interpreting § 101 as containing a "definitive test," the Federal Circuit returns itself to the position from which its predecessor Court of Customs and Patent Appeals removed itself more than forty years ago. In the case of *In re Tarczy-Hornoch*, 397 F. 2d. 856, 857 (CCPA 1968), the CCPA freed itself from the confines of a doctrine based upon a mistaken understanding of "process" developed in decisions going back nearly seventy years previously. The issue was "whether a process claim, otherwise patentable, should be rejected because the application, of which it is a part, discloses apparatus which will inherently carry out the recited steps."

Judge Rich, writing for the CCPA, traced the "legacy of 19th century controversy over the patentability of processes" going back to *Wyeth v. Stone*, 1 Story 273 (C.C. Mass. 1840) at 285–286.. In *Wyeth*, a patent was granted on a method of cutting ice into blocks of uniform size as an "art, as well as the particular method of the application of the principle." Justice Story held that the patent was "void as for an abstract principle and broader than the invention" (*id.*).

All of the Supreme Court cases cited by the Court of Appeals here, going back to *O'Reilly v. Morse*, 15 How. 62 (1854) (and more), were discussed in *Tarczy-Hornoch* with a view toward determining whether process patents were limited to chemical processes or whether work done by machines could also be patented.

Judge Rich cited *Risdon Locomotive Works v. Medart*, 158 U.S. 68 (1895) to support the conclusion that "no valid patent could be obtained 'for a process which involves no more than the operation of a piece of mechanism, or, in other words, for the function of a machine" (*Tarczy-*

Hornoch at 861). *Westinghouse v. Boyden Power Brake Co.*, 170 U.S. 537 (1897) confirmed that process claims that were the "mere function of a machine" were not patentable unless the process was capable of manual operation (397 F.2d. at 862).

"It was at this unfortunate time that our predecessor in jurisdiction of appeals from the Patent Office, the Court of Appeals of the District of Columbia, attempted a synthesis of the cases on 'function of an apparatus.' *In re Weston*, 17 App. D.C. 431 (1901). The Commissioner of Patents had rejected certain claims for a process of manufacturing devices used in electrical measuring instruments. The question before the court was 'the greatly-vexed one, how far a method or process is patentable, and when it is a subject of patentability" (*id.*, footnote omitted). The rejection of two of the four method claims in *Weston* was affirmed, but the rejection of the other two was reversed. Claims reciting the steps of "forming" a spool into a desired shape, "then winding the coil thereon and finally securing the pivotpins thereto in the axial line of the coil" were allowed because "the process and the function of the mechanism are not . . . one and the same thing in law or in our conception of the discovery" (397 F.2d. at 862).

Tarczy-Hornoch concluded, after reviewing the many Supreme Court and other precedents, that there are three classes of processes: First, "processes involving chemical or other elemental action, if new and useful, are patentable; second [a process] that amounts to no more than the mere function of a machine, is not patentable, third, that a process or method of a mechanical nature, not absolutely dependent upon a machine, although perhaps best illustrated by mechanism, may, if new and useful, be the proper subject of a patent, even though it involves no chemical or other elemental action" (at 862–863).

Tarczy-Hornoch, concluded that *Expanded Metal Co. v. Bradford*, 214 U.S. 366 (1908) involved a process of making a mechanical "expanded metal," and the patent was sustained over the contention that *Risdon Locomotive Works v. Medart*, 158 U.S. 68 (1895) and other cases "restricted patents to processes involving chemical action" (at 863). This Court pointed out that cases subsequent to *Risdon* "showed that its language should not be taken as an absolute proscription of patents for mechanical processes." The Court relied upon Curtis, Walker and Robinson texts, which showed that mechanical processes may be patentable (at 863–864).

Cochrane v. Deener, 94 U.S. 780 (1876) held that "an invention or discovery of a process or method involving *mechanical* operations, and producing a new and useful result, may be within the protection of the federal statute, and entitle the inventor to a patent for his discovery" (at 864 emphasis added).

Waxham v. Smith, 294 U.S. 20 (1934), distinguished between the "function a machine performs" and the "means by which that performance is secured." "A method, which may be patented irrespective of the particular form of the mechanism which may be availed of for carrying it into operation, is not to be rejected as "functional,' merely because the specification shows a machine capable of using it" (*id.*).

Based on *Cochrane v. Deener*, *Expanded Metal*, *Waxham* and other cases, the CCPA concluded that the "conventional wisdom" of *In re Weston* and its progeny, holding that a mere function of a machine is not patentable, cannot be sustained. "The issue in this case, therefore, is whether this court will continue to insist upon the connotation its decisions and those of its predecessor in jurisdiction have breathed into the 'function of an apparatus' symbol or will restore to that phrase its former meaning" (at 866). The seventy years of cases absolutely proscribing mechanical processes by the CCPA following *Weston* were determined to be "justified neither by history nor policy. Today we overrule those decisions" (at 857).

The first case decided by the Federal Circuit when it was created in 1982 was *South Corp. v. United States*, 690 F. 2d 1368 (Fed. Cir. 1982). It held that the "body of law represented by the holdings of the . . . Court of Customs and Patent Appeals . . . is most applicable to the areas of law within the substantive jurisdiction of this new court. . . . [T]hat body of law is herewith adopted by this court sitting in banc." The Court of Appeals here did not even mention *Tarczy-Hornoch*, much less overrule this controlling CCPA precedent on whether processes are patentable subject matter unless they are "tied to a particular machine or apparatus," or transform an "article into a different state or thing" (545 F. 3d at 954). That interpretation suggests that a process tied to a function of a machine or a chemical transformation is essential to be patentable, which is completely refuted by *Tarczy-Hornoch*.

Robinson, *Patents* 256 n.2 (1890), taught that "the process and the function are, after all, two entirely different entities, both in intellectual and physical contemplation; the former being capable of conception apart from any object being acted upon, the latter, not so. The difficulty is another form of the old confusion between the end and the means, and is to be avoided by defining sharply the end to be accomplished, and determining whether the machine or the operation performed by it is the actual means. For if the operation performed by the machine is new in reference to the object upon which it is employed, a new process has been invented; and this is no less true if the machine or the instrument employed is new than if it were old, or if the process can be performed in no other known way than by this particular machine. While, on the other hand, if the operation is known in reference to the object, the invention of a new machine for performing it does not make a new process, but only a new instrument for applying it" (*Tarczy-Hornoch*, 397 F.2d at 867).

Before leaving *Tarczy-Hornoch,* candor requires acknowledgement that Justice Stevens, dissenting in *Diehr*, criticized *Tarczy-Hornoch*, as "repudiating the well-settled 'function of a machine' . . . doctrine [and] reinterpreted § 101 of the Patent Code to enlarge drastically the categories of patentable subject matter. This reinterpretation would lead to the conclusion that computer programs were within the categories of inventions to which Congress intended to expend patent protection" (450 U.S. at 198).

However, *Tarczy-Hornoch* reviewed the same Supreme Court decisions reviewed by the Court of Appeals here and concluded that "when all are considered and correlated hold: (1) That useful methods are statutory subject matter, whether they involve chemical or other elemental action, or are purely mechanical, and when a claim in fact defines a method its patentability is determined by comparison with the prior art. (2) That the mere function or effect of a machine is not a method, and thus not statutory subject matter, so, when a claim that purports to define a method, is found in fact to define only the desired function or effect (and not the acts or steps which result in the desired function or effect), it is properly refused or held invalid on such grounds" (397 F.2d at 865).

The second conclusion cannot fairly be described as "reinterpretation" of the Supreme Court precedents. They are, rather, an honest effort at consideration and correlation of them. *Tarczy-Hornoch* contains not a single word relating to computer programs. The patentability of computer programs is unrelated to either chemical or mechanical processes, the concern of *Tarczy-Hornoch*.

A "process" operates; a "machine" functions. The end to be accomplished in a process is work that may or may not be new. The end to be accomplished in a machine is an assemblage of parts in an apparatus that may or may not be new. Novel or not, the operation is patentable subject matter, just as the machine is patentable subject matter. The Court of Appeals holding that a process either must "be tied to a machine" or be a "transformation" confuses means and end, as Robinson said. Whether a process cannot be a function of a machine to be patentable, as *Weston* and its progeny held, or must be a function of a machine or a chemical transformation to be patentable, is a departure from "useful arts" in the Constitution, and from "process" in § 101.

Weston held that the operation of a machine cannot be patentable. *Bilski* holds that the operation of a machine is essential to be patentable (or else a chemical transformation). The decision below cannot be reconciled with *Weston*, with *Tarczy-Hornoch*, or with this Court's precedents.

CONCLUSION

The Court of Appeals fails to abide by the language of the statute, the holdings of this Court, and the holdings of its own predecessor court. The Court of Appeals "has entered a decision in conflict with the decision of another United States court of appeals [that it expressly held to be binding precedent in *South*] as to call for this Court's supervisory power" (Supreme Court Rule 10(a)). The Petition should be granted.

John P. Sutton urges the Court to grant the petition in order to clarify the law as to processes patentable under § 101. Processes need not be tied to a particular machine and need not be limited to a transformation into a different state or thing. Rather, processes must be "useful arts." Commodity trading is commerce, not a useful art.

Dated: February 25, 2009 Respectfully submitted,

John P. Sutton

JOHN P. SUTTON
Attorney at Law
2421 Pierce Street
San Francisco, CA 94115-1131
Telephone: (415) 929-7408
Pro se

JOINT
APPENDIX

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IN THE

Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

JOINT APPENDIX

ELENA KAGAN
Counsel of Record
SOLICITOR GENERAL
DEPARTMENT OF JUSTICE
Washington, D.C. 20530
(202) 514-2217

Counsel for Respondent

J. MICHAEL JAKES
Counsel of Record
ERIKA H. ARNER
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.
901 New York Avenue, N.W.
Washington, D.C. 20001
(202) 408-4000

RONALD E. MYRICK
DENISE W. DEFRANCO
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.
55 Cambridge Parkway
Cambridge, MA 02142
(617) 452-1600

Counsel for Petitioners

WILSON-EPES PRINTING CO., INC. – (202) 789-0096 – WASHINGTON, D.C. 20002

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

EX PARTE BERNARD L. BILSKI AND RAND A. WARSAW
Application No. 08/833,892
Appeal No. 2002-2257

RELEVANT DOCKET ENTRIES

DATE	NO.	GENERAL DESCRIPTION
4/10/97	1	Energy Risk Management Method Patent Application filed
3/4/99	5	Office Action objecting to claims 4-8; rejecting claims 1-3 under 35 U.S.C. § 102(e); and rejecting claim 9 under 35 U.S.C. § 103(a)
5/3/99	6	Applicants' Amendment amending claim 4 and adding new claims 10-11
7/21/99	7	Office Action allowing claims 4-8, 10, and 11; rejecting claims 1-3 under 35 U.S.C. § 102(b); and rejecting claim 9 under 35 U.S.C. § 103(a)
8/30/99	8	Applicants' Request for Reconsideration
11/8/99	9	Office Action rejecting claims 1-11 under 35 U.S.C. § 101

DATE	NO.	GENERAL DESCRIPTION
11/15/99	11	New Drawings
11/17/99	12	Applicants' Supplemental Amendment amending claim 4
1/6/00	13	Applicants' Response to Office Action
1/18/00	14	Applicants' Supplemental Response to Office Action
3/28/00	15	Final Office Action rejecting claims 1-11 under 35 U.S.C. § 101
4/10/00	16	Notice of Appeal to the Board of Patent Appeals and Interferences
5/23/00	17	Appellants' Brief on Appeal and Request for Oral Hearing
8/15/00	18	Examiner's Answer to Appellants' Brief on Appeal
9/25/00	19	Appellants' Reply Brief
4/3/03	22	Case heard before Administrative Patent Judges Barrett, Fleming, and Nagumo
3/8/06	24	Case heard before Administrative Patent Judges Frankfort, McQuade, Barrett, Bahr, and Nagumo
9/26/06	26	Decision on Appeal
11/22/06	27	Notice of Appeal to the United States Court of Appeals for the Federal Circuit

IN THE UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

No. 2007-1130
(Serial No. 08/833,892)

IN RE BERNARD L. BILSKI AND RAND A. WARSAW

RELEVANT DOCKET ENTRIES

DATE	NO.	GENERAL DESCRIPTION
1/11/07	1	Appeal docketed
3/12/07	5	Appellants Bernard L. Bilski and Rand A. Warsaw, brief filed
4/30/07	13	Amicus Curiae American Intellectual Property Law Association, brief filed
6/13/07	18	Appellee Director of the United States Patent and Trademark Office, brief filed
7/2/07	19	Appellants Bernard L. Bilski and Rand A. Warsaw, reply brief filed
7/6/07	20	Joint Appendix filed
10/1/07	27	Case heard before Circuit Judges Bryson, Clevenger, and Moore
2/15/08	30	Order granting, sua sponte, a hearing en banc and instructing parties to submit supplemental briefs

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DATE	NO.	GENERAL DESCRIPTION
3/6/08	32	Appellants Bernard L. Bilski and Rand A. Warsaw, supplemental brief filed
3/6/08	34	Appellee Director of the United States Patent and Trademark Office, supplemental brief filed
4/3/08	88	Amicus Curiae Accenture, brief filed
4/3/08	109	Amicus Curiae Accenture, corrected brief filed
4/3/08	45	Amicus Curiae American Civil Liberties Union, brief filed
4/3/08	49	Amicus Curiae Koninklijke Philips Electronics N.V., brief filed
4/3/08	119	Amicus Curiae Professor Lee A. Hollaar, brief filed
4/4/08	105	Amicus Curiae End Software Patents, brief filed
4/4/08	57	Amicus Curiae Law Professor Kevin Emerson Collins, brief filed
4/4/08	54	Amici Curiae Reserve Management Corporation, PCT Capital LLC, Rearden Capital Corp. and Sales Optimization Group, brief filed
4/4/08	63	Amicus Curiae Washington State Patent Law Association, brief filed
4/7/08	108	Amicus Curiae American Express Company, brief filed

DATE	NO.	GENERAL DESCRIPTION
4/7/08	96	Amicus Curiae American Institute of Certified Public Accountants, brief filed
4/7/08	118	Amicus Curiae American Intellectual Property Law Association, brief filed
4/7/08	125	Amici Curiae Bank of America Corp. and Financial Services Industry, brief filed
4/7/08	122	Amicus Curiae Biotechnology Industry Organization, brief filed
4/7/08	106	Amicus Curiae Boston Patent Law Association, brief filed
4/7/08	104	Amicus Curiae Business Software Alliance, brief filed
4/7/08	126	Amicus Curiae Center for Advanced Study and Research on Intellectual Property (CASRIP) of the University of Washington School of Law, supplemental brief filed
4/7/08	120	Amicus Curiae CFPH, LLC, brief filed
4/7/08	116	Amicus Curiae Computer & Communications Industry Association, brief filed
4/7/08	124	Amici Curiae Consumers Union, Electronic Frontier Foundation, and Public Knowledge, brief filed

DATE	NO.	GENERAL DESCRIPTION
4/7/08	121	Amici Curiae Dell Inc., Microsoft Corporation, and Symantec Corporation, brief filed
4/7/08	115	Amici Curiae Eli Lilly and Company and The Association of American Medical Colleges, brief filed
4/7/08	127	Amicus Curiae Federal Circuit Bar Association, brief filed
4/7/08	103	Amicus Curiae Fédération Internationale Des Conseils En Propriété Industrielle, brief filed
4/7/08	202	Amicus Curiae Gregory Aharonian, brief filed
4/7/08	72	Amicus Curiae Houston Intellectual Property Law Association, brief filed
4/7/08	107	Amicus Curiae Intellectual Property Owners Association, brief filed
4/7/08	69	Amicus Curiae International Business Machines Corporation, brief filed
4/7/08	91	Amicus Curiae Jason V. Morgan, brief filed
4/7/08	123	Amici Curiae Pacific Life Insurance Company, The Hartford Financial Services Group, Inc., and John Hancock Life Insurance Company (U.S.A.), brief filed
4/7/08	113	Amicus Curiae Red Hat, Inc., brief filed

DATE	NO.	GENERAL DESCRIPTION
4/7/08	79	Amicus Curiae Regulatory Data-Corp, Inc., brief filed
4/7/08	102	Amicus Curiae Roberta J. Morris, Esq., Ph.D., brief filed
4/7/08	114	Amicus Curiae SAP America, Inc., brief filed
4/7/08	117	Amicus Curiae Software & Information Industry Association, brief filed
4/7/08	110	Amici Curiae Ten Law Professors, brief filed
4/7/08	111	Amicus Curiae 22 Law and Business Professors, brief filed
4/7/08	128	Amicus Curiae William Mitchell College of Law Intellectual Property Institute, brief filed
4/7/08	112	Amici Curiae Yahoo! Inc. and Professor Robert P. Merges, brief filed
4/14/08	214	Amicus Curiae American Express Company, motion for leave to participate in oral argument
4/15/08	213	Amici Curiae Bank of America Corp. and Financial Services Industry, motion for leave to participate in oral argument
4/16/08	226	Amici Curiae Yahoo! Inc. and Professor Robert P. Merges, motion for leave to participate in oral argument

DATE	NO.	GENERAL DESCRIPTION
4/17/08	229	Amicus Curiae American Intellectual Property Law Association, motion for leave to participate in oral argument
4/18/08	230	Order directing all motions by amici seeking oral argument to be filed by 4/23/08
4/18/08	231	Amici Curiae Reserve Management Corporation, PCT Capital LLC, Rearden Capital Corp. and Sales Optimization Group, motion for leave to participate in oral argument
4/22/08	232	Amicus Curiae Business Software Alliance, motion for leave to participate in oral argument
4/23/08	233	Amicus Curiae Regulatory Data-Corp International, LLC, motion for leave to participate in oral argument
4/23/08	234	Amicus Curiae Eli Lilly and Company, motion for leave to participate in oral argument
4/23/08	235	Amici Curiae Dell Inc., Microsoft Corporation, and Symantec Corporation, motion for leave to participate in oral argument
4/23/08	236	Amicus Curiae CFPH, LLC, motion for leave to participate in oral argument

DATE	NO.	GENERAL DESCRIPTION
4/25/08	237	Order granting motions for leave to participate in oral argument by Amicus Curiae Regulatory Data-Corp International, LLC and Amici Curiae Bank of America Corp. and Financial Services Industry, each party to be given 10 minutes, and denying all other motions for oral argument
5/8/08	251	Case heard en banc before Chief Judge Michel and Circuit Judges Lourie, Schall, Bryson, Gajarsa, Linn, Dyk, Prost, Newman, Mayer, Rader, and Moore
10/30/08	257	Judgment entered, affirmed
10/30/08	256	Opinion for the Court filed by Chief Judge Michel. Concurring opinion by Circuit Judge Dyk with whom Circuit Judge Linn joins. Dissenting opinion by Circuit Judge Newman. Dissenting opinion by Circuit Judge Mayer. Dissenting opinion by Circuit Judge Rader.
12/22/08	255	Mandate issued to the Patent and Trademark Office

In the United States Patent and Trademark Office

U.S. Patent Application No. 08/833,892 entitled "Energy Risk Management Method," filed April 10, 1997

TITLE

ENERGY RISK MANAGEMENT METHOD

BACKGROUND OF THE INVENTION

Related Application

This application claims the benefit of U.S. Provisional Application No. 60/015,756, filed April 16, 1996.

1. Field of the Invention

The invention herein relates to methods for managing the consumption risk costs of a commodity sold at a fixed price and, more particularly, methods for managing the weather-related risks associated with energy pricing.

2. Brief Description of the Prior Art

Energy consumers nationwide suffer substantial cost risk from month-to-month and year-to-year. As an illustration, the NYMEX contract for natural gas has been the most volatile contract ever traded with near-term volatilities regularly exceeding 40 to 70%, well above that for all other commodities traded. For budget-sensitive customers, actual expenditures for energy can easily be 20% or more above or below what was budgeted.

There are two key sources for the energy cost risk facing these customers: price risk and consumption risk. In natural gas, price risk is evidenced in the volatilities of the NYMEX contract and other over-the-counter location-specific instruments (swaps, basis swaps, forwards). In electricity, the new NYMEX electricity contract is showing at least as much volatility as natural gas.

Because of the proliferation in price risk management tools over the last 5 years, though, price risk is now easily managed in energy markets. Consumption risk, on the other hand, is not currently managed in energy markets. Accordingly, there is a need for a fixed bill product to manage total energy cost risk including the consumption risk.

SUMMARY OF THE INVENTION

The risk management method of the present invention is based upon a fixed bill product which essentially guarantees the customer a normal winter and locks in a payment stream (a fixed energy bill) for whatever period the consumer wishes. This is not the "budget bill" offered by many local distribution companies, wherein the consumer pays a temporary fixed payment but must make a full accounting in a subsequent period in the event actual consumption or prices are different than what has been charged for.

The fixed bill method of the present invention manages the risk-associated costs of a commodity sold by a commodity provider at a fixed price. Such risk-associated costs include the weather-related costs of a fixed-price energy bill. However, it is to be distinctly understood that the present method can be used for any commodity to manage consumption risk in a fixed bill price product. The commodity provider initiates a series of transactions with consumers of the commodity wherein the consumers purchase the commodity at a fixed rate based upon historical averages. The fixed rate corresponds to a risk position of the consumers. The commodity provider then identifies market participants for the commodity who have a counter-risk position to that of the consumers. The commodity provider then initiates a series of transactions with such market participants at a second fixed rate such that the series of market participant transactions balances the risk position of the series of consumer transactions.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention can best be illustrated in connection with the management of weather-related risks associated with fixed bill energy pricing. A consumer's unhedged energy bill for a given period i can be shown as in Equation (1) below:

(1) $\text{Energy Bill}_i = F_i + (C_i + T_i + LD_i) \times Q_i$

wherein,

F_i = fixed costs in period i,

C_i = variable commodity costs in period i,

T_i = variable long distance transportation costs in period i,

LD_i = variable LDC or local delivery costs in period i, and

Q_i = consumption in period i.

In Equation (1), the consumer could easily fix a portion of the costs by using futures or over-the-counter instruments to lock in a price on the portion of consumption that is known with certainty. For instance, any energy consumption that is not weather driven may be highly predictable. A consumer could then fix the cost of this portion of total consumption with confidence that an effective hedge is achieved. To the extent, however, that the consumption is weather driven, the consumer cannot confidently lock in a price.

An industrial consumer with baseload process requirements can achieve all the hedge required by simply locking in prices. A school district or hospital with significant unknown weather-driven requirements cannot reduce risk with the same hedge; a large portion of its risk is tied up in the weather risk as opposed to the price risk. For these reasons, one can think of the consumption variable, Q_{i}, as in Equation (2).

(2) $Q_{i,l} = f(B_i, W_{i,l})$

wherein,

B_i = base (predictable) consumption in period i, and

$W_{i,l}$ = a location-specific weather indicator, either $HDD_{i,l}$ for heating degree days during the ith period and location l, or CDD_{i} for cooling degree days for the ith period at location l. For a given day, one takes 65 degrees less the average daily temperature at a given location to find the number of heating degree days (HDD) for that day. Similarly, one takes the average daily temperature at the same location less 65 degrees to find the number of cooling degree days (CDD) for that day. Both numbers are by definition non-negative.

For a given consumer, Equation (2) can be estimated with ordinary least squares in a model of the form:

(3) $Q_{i,1} = \alpha + \beta W_{i,1} + \epsilon_1$

Since goodness of fit is the objective in estimating Equation (3), the results of Equation (3) can be variously estimated with non-log, semi-log or log-log forms.

Next, an assumption is made that $W_{i,1} \sim N(\mu,\sigma)$, that is, that the HDD or CDD variable of the location-specific weather indicator is normally distributed with mean μ and standard deviation σ.

With the assembling of the various estimations and identities the fixed bill estimate for a consumer can be shown as in Equation (4).

(4) Fixed Bill = $F_i + [(C_i + T_i + LD_i) \times (\alpha + \beta E(W_1)]$

Equation 4 assumes that the provider's margin is included in C_i.

As Equation (4) shows, the usage level, once estimated for a given consumer in a given location, is now fixed as an expected value for purposes of defining consumption.

The model presented above identifies a conceptual approach to understanding how a fixed bill transaction might be calculated for a consumer. In practice, this concept is only a starting point. A provider of fixed bill transactions will be much like a provider of other risk management tools in that the risk that is extracted from consumers must be laid off with counterparties that have an opposite appetite for the risk. All risk management markets are made up of parties with appetites for length positions and parties with balancing appetites for short positions. Thus, the provider will have the goal of matching "shorts" (sales to consumers) with length while maintaining a margin between these positions.

The natural counterparty for the energy transaction discussed above is a reasonably collocated distribution company who has the opposite economic appetite for weather patterns. Where consumers are concerned about colder than normal winters, distribution companies are concerned about warmer than normal winters. The opposite risk positions make a risk management trade possible. The provider's goal then is to find a distribution company that is willing to pay an amount of money when the winter is colder than normal in return for payments to the utility when the winter is warmer than normal. This is a swap.

At the simplest level, once Equation (4) is approximated for a given consumer one can divide the variable cost portion of the calculated Fixed Bill by the E(HDD) or E(CDD) to obtain the provider's marginal cost per HDD or CDD. Given this, the provider would search for a distribution company interested in the swap that satisfies the following condition:

(5) $\partial \text{ Costs}/\partial/\text{HDD}_l = \partial \text{ Swap Receipts}/\partial\text{HDD}_l$

Condition (5) simply says that when a provider's costs increase with actual heating degree days at the lth location he would want a precisely offsetting swap receipt to cover the marginal weather-driven cost.

Laying off risk for a fixed bill transaction, however, is vastly different than it is for most risk management products. This results because (a) weather is not a fungible commodity, and (b) the counterparties will often desire risk protection at different, imperfectly correlated weather locations. Contrasted with a situation like the NYMEX contract where a provider could establish equal and exactly offsetting positions the provider retains some unhedgeable weather risk when short positions are established at one location and long positions are established at different locations. The best the provider can do is build a book around reasonably correlated weather patterns.

In theory, one could evaluate the economically weighted joint probability density function $W_{i,1} \sim N(\mu,\sigma)$ parametrically for all locations in the provider's book. However, this proves quickly intractable as the number of locations increases to approximately three. Rather, the steps taken in pricing a deal, and in managing the portfolio, involve the following steps:

1. evaluate the usage and all costs for a prospective deal;

2. perform a Monte Carlo simulation across all deals at all locations in the book over the last 20 years of weather patterns and establish the payoffs from each deal under each historical weather pattern;

3. assume that the summed payoffs are distributed $N(\mu,\sigma)$;

4. perform one-tail tests to determine the marginal likelihood of losing money on the deal and the marginal likelihood of retaining at least the design margin included in the initial evaluation of Equation (4);

5. if the transaction as initially priced leads to a reduced expected margin or increases the likelihood of a loss add more margin to Equation (4) and vice versa until the expected portfolio margin and the likelihood of portfolio loss is acceptable.

With the fixed bill thus calculated for a consumer several risks remain for the provider of such service:

1. How does the provider allow for the fact that the consumer may be encouraged to become less efficient

in its utilization of energy now that it can consume all it wants for a fixed payment?

2. How does the provider allow for price volatility, apart from the weather volatility?

A key feature of the final consumer agreement is that energy use per HDD or CDD remains within a band established as the annual standard error of the intercept in the usage estimation. This is typically a band with a width of 2% or so. In the event the consumer uses more energy per degree day than shown historically it is penalized. And in the event the consumer uses less energy per degree day it is refunded dollars, regardless of whether the energy pattern is warmer or colder than expected and used in the fixed bill calculation.

Finally, embedded in the deal pricing steps above, the commodity price volatility within the fixed bill must be managed. If only the expected value is purchased one can guarantee that it will have too little or too much fixed price energy available for the customer. A rule that seems to work in this regard is for the provider to purchase forward, fixed price energy at one standard deviation below the expected consumption level for the consumer, and to purchase at-the-money calls on the next two standard deviations of consumption. This strategy covers 86% of the possible weather pattern events, with minimal but symmetric outliers beyond what is financially covered. The provider will, of course, want full physical coverage on all possible weather patterns.

While the variable C_i implicitly contains fixed forward prices, there is no reason why the commodity price component of the transaction could not be priced as a pure option or a price range. In the call option formulation the weather itself would be fixed but pricing could be adjusted to allow the consumer to benefit if commodity prices fall over the course of the transaction. This, of course, would imply an option payment by the consumer up front. With a price range feature the consumer would give back a floor to the provider of equal value to offset the cost of the call option. Here then the commodity price would not go above the call strike and would fall until the market price hit the put strike on the lower end. Other option-based structures could include a sharing of price increases and/or decreases with the weather fixed.

Also, through the Monte Carlo simulation process, one could establish a cap on the weather. Here, the pricing process would run as follows:

1. evaluate the usage equation and all costs for a prospective deal;

2. perform a Monte Carlo simulation across all deals at all locations in the book over the last 20 years of weather patterns and establish the payoffs from each deal under each historical weather pattern assuming that the price in the deal being priced floats down when the weather is below normal;

3. assume that the summed payoffs are distributed $N(\mu,\sigma)$;

4. perform one-tail tests to determine the marginal likelihood of losing money on the deal and the marginal likelihood of retaining at least the design margin included in the initial evaluation of Equation (4);

5. continue repricing the margin in the transaction until the expected portfolio margin and likelihood of portfolio loss is acceptable;

6. established in this way the margin becomes essentially the cost of a call option on weather at location l.

A model is presented that allows for the full risk management of a budget sensitive energy consumer. Energy consumers have heretofore been able to manage price risk but not overall cost risk. This is because the weather pattern has been previously unmanageable. With a combination of price risk management and the ability to "lay off" weather risk to natural counterparties an energy provider can provide complete energy cost risk management.

While certain present preferred embodiments have been shown and described, it is distinctly understood that the invention is not limited thereto but may be otherwise embodied within the scope of the following claims.

CLAIMS:

1. A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:

   (a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumers;

(b) identifying market participants for said commodity having a counter-risk position to said consumers; and

(c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions.

2. The method of claim 1 wherein said commodity is energy and said market participants are transmission distributors.

3. The method of claim 2 wherein said consumption risk is a weather-related price risk.

4. The method of claim 3 wherein the fixed price for the consumer transaction is determined by the relationship:

Fixed Bill Price = $F_i + [(C_i + T_i + LD_i) \times (\alpha + \beta E(W_i)]$ wherein,

F_i = fixed costs in period i;

C_i = variable costs in period i;

T_i = variable long distance transportation costs in period i;

LD_i = variable local delivery costs in period i;

$E(W_i)$ = estimated location-specific weather indicator in period i; and α and β are constants.

5. The method of claim 4 wherein said location-specific weather indicator is at least one of heating degree days and cooling degree days.

6. The method of claim 4 wherein said energy provider seeks a swap receipt to cover the marginal weather-driven cost.

7. The method of claim 4 wherein the energy price is determined by the steps of:

(a) evaluating the usage and all costs for a prospective transaction;

(b) performing a Monte Carlo simulation across all transactions at all locations for a predetermined plurality of years of weather patterns and establishing the payoffs from each transaction under each historical weather pattern;

(c) assuming that the summed payoffs are normally distributed;

(d) performing one-tail tests to determine the marginal likelihood of losing money on the deal and the marginal likelihood of retaining at least the design margin included in the initial evaluation of the fixed bill price; and

(e) adjusting the margin of the fixed bill price if the transaction as initially priced leads to a reduced expected margin or increases the likelihood of a loss until the expected portfolio margin and the likelihood of portfolio loss is acceptable.

8. The method of claim 4 wherein a cap on the weather-influenced pricing is established by the steps of:

(a) evaluating the usage equation and all costs for a prospective transaction;

(b) performing a Monte Carlo simulation across all transactions at all locations for a predetermined plurality of years of weather patterns and establishing the payoffs from each transaction under each historical weather pattern assuming that the price in the transaction being priced floats down when the weather is below normal;

(c) assuming that the summed payoffs are normally distributed;

(d) performing one-tail tests to determine the marginal likelihood of losing money on the transaction and the marginal likelihood of retaining at least the design margin included in the initial evaluation of the fixed price bill;

(e) continuing to reprice the margin in the transaction until the expected portfolio margin and likelihood of portfolio loss is acceptable; and

(f) establishing the margin as a call option on weather at a predetermined location.

9. The method of claim 1 wherein said commodity provider seeks a swap receipt to cover the price risk of the consumer transaction.

ABSTRACT

A method is provided for managing the risk-associated costs of a commodity sold by a commodity provider at a fixed price. Such risk-associated costs include the weather-related costs of a fixed-price energy bill. The commodity provider initiates a series of transactions with consumers of the commodity wherein the consumers purchase the commodity at a fixed rate based upon historical averages. The fixed rate corresponds to a risk position of the consumers.

The commodity provider then identifies market participants for the commodity who have a counter-risk position to that of the consumers. The commodity provider then initiates a series of transactions with the market participants at a second fixed rate such that the series of market participant transactions balances the risk position of the series of consumer transactions.

PETITIONER'S BRIEF

135

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IN THE

Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,
v.
JOHN J. DOLL, ACTING UNDER SECRETARY OF
COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING
DIRECTOR OF THE UNITED STATES PATENT AND
TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF FOR PETITIONERS

J. MICHAEL JAKES
Counsel of Record
ERIKA H. ARNER
FINNEGAN, HENDERSON,
FARABOW, GARRETT &
DUNNER, L.L.P.
901 New York Avenue, N.W.
Washington, D.C. 20001
(202) 408-4000

RONALD E. MYRICK
DENISE W. DEFRANCO
FINNEGAN, HENDERSON,
FARABOW, GARRETT &
DUNNER, L.L.P.
55 Cambridge Parkway
Cambridge, MA 02142
(617) 452-1600

WILSON-EPES PRINTING CO., INC. – (202) 789-0096 – WASHINGTON, D. C. 20002

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QUESTIONS PRESENTED

1. Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

2. Whether the "machine-or-transformation" test for patent eligibility adopted by the Federal Circuit, effectively foreclosing meaningful patent protection to a business method involving a series of transactions among a commodity provider, consumers, and market participants, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273.

PARTIES TO THE PROCEEDING

All of the parties to the proceeding in the court below are named in the caption of the case in this Court.

RULE 29.6 CORPORATE DISCLOSURE STATEMENT

The amended corporate disclosure statement in Petitioners' reply brief on the petition for a writ of certiorari remains accurate. In addition, Petitioners note that WeatherWise USA, Inc., is a party-in-interest in the patent application.

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IN THE

Supreme Court of the United States

No. 08-964

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,
v.
JOHN J. DOLL, ACTING UNDER SECRETARY OF
COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING
DIRECTOR OF THE UNITED STATES PATENT AND
TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

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BRIEF FOR PETITIONERS

OPINIONS BELOW

The opinion of the U.S. Court of Appeals for the Federal Circuit (Pet. App. 1a-143a) is reported at *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc). The Order of the U.S. Court of Appeals for the Federal Circuit granting a hearing en banc (Pet. App. 144a-145a) is reported at *In re Bilski*, 264 F. App'x 896 (Fed. Cir. 2008).

The opinion of the Board of Patent Appeals and Interferences of the United States Patent and Trademark Office (Pet. App. 146a-205a) is reported at *Ex parte Bilski*, 2006 WL 5738364 (B.P.A.I. Sept. 26, 2006).

JURISDICTION

The en banc judgment of the U.S. Court of Appeals for the Federal Circuit was entered on October 30, 2008. The jurisdiction of this Court is invoked under 28 U.S.C. § 1254(1).

STATUTORY PROVISIONS INVOLVED

"Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." 35 U.S.C. § 101.

"The term 'process' means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material." 35 U.S.C. § 100(b).

"It shall be a defense to an action for infringement under section 271 of this title with respect to any subject matter that would otherwise infringe one or more claims for a method in the patent being asserted against a person, if such person had, acting in good faith, actually reduced the subject matter to practice at least 1 year before the effective filing date of such patent, and commercially used the subject matter before the effective filing date of such patent." 35 U.S.C. § 273(b)(1).

"[T]he term 'method' means a method of doing or conducting business." 35 U.S.C. § 273(a)(3).

STATEMENT OF THE CASE

A. The Claimed Invention

Bernard Bilski and Rand Warsaw invented a method of hedging the consumption risk associated with a commodity sold at a fixed price for a given period. The method can be used, for example, with energy commodities like natural gas, electricity, or coal, and includes ways to compensate for the risk of abnormal weather conditions. It enables both energy suppliers and consumers to minimize the risk of fluctuations in demand during a given period. Thus, for example, a school district with a fixed tax base and budget for heating or cooling requirements can be protected from yearly fluctuations in weather, while the suppliers are protected from the opposite effect of such fluctuations.

More specifically, the Bilski patent application, entitled "Energy Risk Management Method," describes a method in which energy consumers, such as businesses and homeowners, are offered a fixed energy bill, for example, for the winter so they can avoid the risk of high heating bills due to abnormally cold weather. J.A. 10, 13. An intermediary or "commodity provider" sells natural gas, in this example, to a consumer at a fixed price based on its risk position for a given period of time, thus isolating the consumer from an unusual spike in demand caused by a cold winter. Regardless of how much gas the consumer uses consistent with the method, the heating bill will remain fixed.

According to the patent application, setting the fixed bill price for the consumer is not a simple process. *See id.* at 12-14. For example, a consumer's "unhedged" energy bill for a given period can be expressed as follows:

Energy Bill = $F_i + (C_i + T_i + LD_i) \times Q_i$, where

F_i = fixed costs in period i;

C_i = variable commodity costs in period i;

T_i = variable long distance transportation costs in period i;

LD_i = variable LDC or local delivery costs in period i; and

Q_i = consumption in period i.

J.A. 12. The consumer could fix a portion of the costs by using futures, for example, to lock in a price on the portion of consumption that is known with certainty. This type of "hedge" is not effective, however, to the extent that consumption is driven by the weather. *Id.* at 13. Thus, a school district, for example, cannot reduce its risk simply by locking in a price since much of the risk depends on the weather. *Id.*

To account for the weather, the patent application teaches that a consumer's fixed bill price can be determined as follows:

Fixed Bill Price = $F_i + [(C_i + T_i + LD_i) \times (\alpha + \beta E\,(W_i))]$

In this equation, $\alpha + \beta E\,(W_i)$ represents an approximation of the amount of consumption driven by the weather, which is estimated with a least squares statistical model based on historical averages. *See id.* at 13-14.

Having assumed the risk of a very cold winter, the same commodity provider hedges against that risk by buying the energy commodity at a second fixed price from energy suppliers called "market participants." *Id.* at 12. These market participants or suppliers have a risk position counter to the consumers, that is, they want to avoid the risk of a high drop in demand due to an unusually warm winter. A market participant could be, for example, someone with a large inventory of gas who wants to guarantee the sale of a portion of it by entering into a contract now. The risk assumed in the transactions with the market participants at the second fixed rate balances the risk of the consumer transactions at the first rate. *Id.* at 12, 15.

The commodity provider must take additional statistical modeling steps (Monte Carlo simulations, one-tail tests) to properly price a deal and estimate an acceptable margin over the entire portfolio of transactions. *Id.* at 16. The steps taken in pricing a deal, and in managing the portfolio, are shown in Figure 2[1] of the application and described at J.A. 16-19:

---

[1] The application as filed (found at J.A. 10-23) did not include Figure 2, which was added by amendment (Applicants' Supplemental Amendment, 11/15/99) in response to the patent examiner's requirement to provide a drawing under 37 C.F.R. § 1.81 (PTO Office Action, 11/8/99, p. 2).

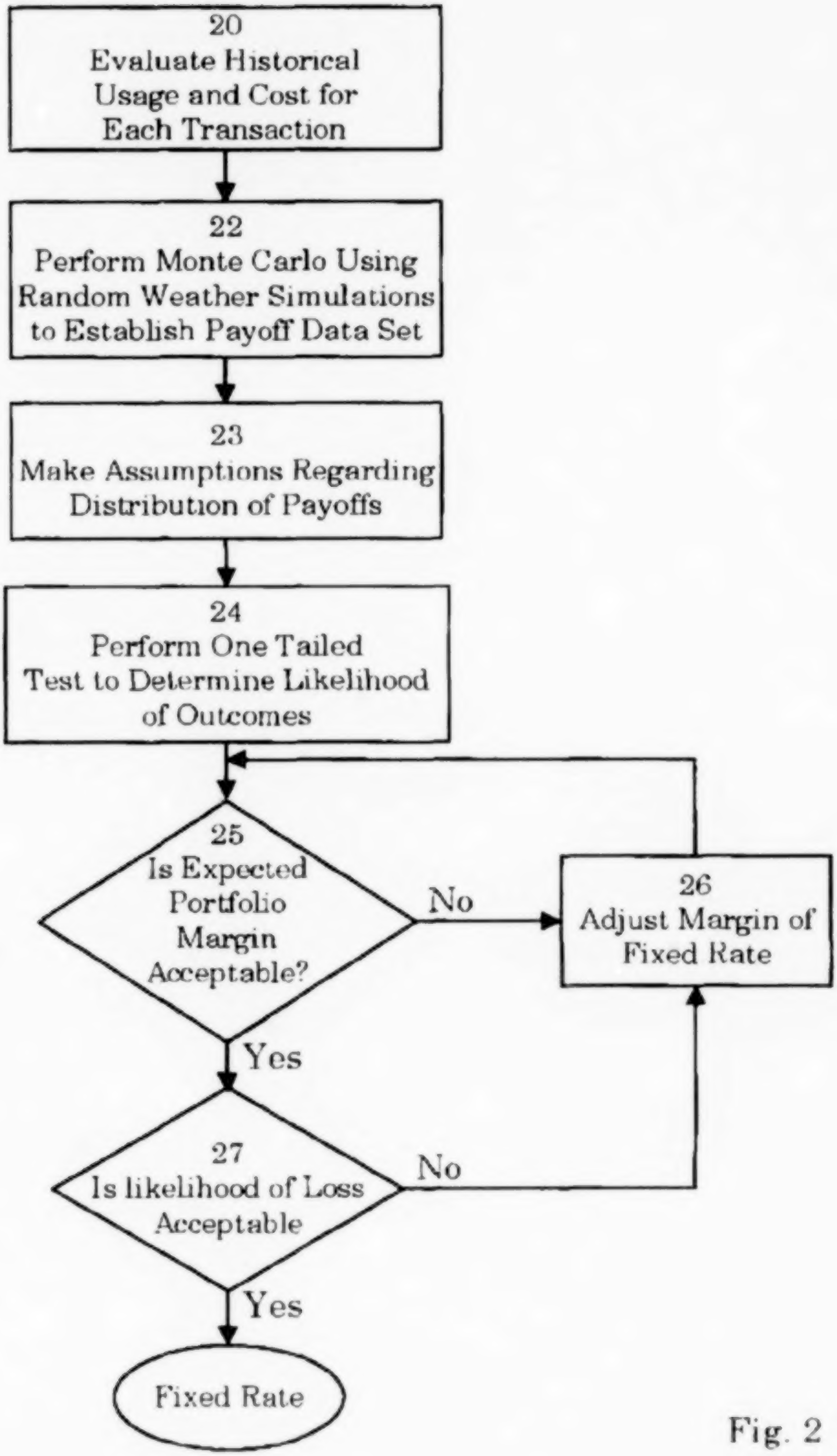
20
Evaluate Historical Usage and Cost for Each Transaction
22
Perform Monte Carlo Using Random Weather Simulations to Establish Payoff Data Set
23
Make Assumptions Regarding Distribution of Payoffs
24
Perform One Tailed Test to Determine Likelihood of Outcomes
25
Is Expected Portfolio Margin Acceptable?
No
26
Adjust Margin of Fixed Rate
Yes
27
Is likelihood of Loss Acceptable
No
Yes
Fixed Rate

Fig. 2

The method of the invention does not necessarily have to be performed on a particular machine or computer, although the practice of the invention will most likely involve both computers and modern telecommunications. The method steps are no less real, however, as they require communicating and negotiating with consumers and suppliers in a particular way to balance risk positions. The invention is claimed in a series of steps as follows:

> 1. A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:
>
> (a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer;
>
> (b) identifying market participants for said commodity having a counter-risk position to said consumers; and
>
> (c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions.

Fed. Cir. J.A. A-198. Claim 4 of the patent application is similar to claim 1 except that it specifies precisely how the fixed price for an energy consumer transaction is determined using a mathematical formula:

4. A method for managing weather-related energy price risk costs sold by an energy provider at a fixed price comprising the steps of:

(a) initiating a series of transactions between said energy provider and energy consumers wherein said energy consumers purchase energy at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumers, wherein the fixed price for the consumer transaction is determined by the relationship:

Fixed Bill Price = $F_i + [(C_i + T_i + LD_i) \times (\alpha + \beta E(W_i))]$

Wherein,

F_i = fixed costs in period i;

C_i = variable costs in period i;

T_i = variable long distance transportation costs in period i;

LD_i = variable local delivery cost in period i;

$E(W_i)$ = estimated location-specific weather indicator in period i; and

α and β are constants;

(b) identifying other energy market participants having a counter-risk position to said consumers; and

(c) initiating a series of transactions between said energy provider and said other energy market participants at a second fixed rate such that said series of transactions balances the risk position of said series of consumer transactions.

Fed. Cir. J.A. A-198 to A-199.

B. Proceedings In The Patent And Trademark Office

1. In the first Office Action from the Patent and Trademark Office (PTO), the patent examiner found claims 4-8 of the Bilski application to be patentable over the prior art (claim 4 was the same as above except written in dependent form) but rejected claims 1-3 and 9. (PTO Office Action, 3/4/99, pp. 2-4.) In response to an amendment filed by the applicants (Applicants' Amendment, 5/3/99), the examiner again allowed claims 4-8 and new claims 10-11, but maintained the rejection of claims 1-3 and 9 over the prior art (PTO Office Action, 7/21/99, pp. 2-5).

Then, in a third Office Action, the patent examiner withdrew the prior art rejections and instead rejected all the claims, including claims 4-8 and 10-11, under only 35 U.S.C. § 101, as directed to nonstatutory subject matter. (PTO Office Action, 11/8/99, pp. 2-3.) The examiner stated that "the invention is not implemented on a specific apparatus and merely manipulates [an] abstract idea and solves a purely mathematical problem without any limitation to a practical application, therefore, the invention is not directed to the technological arts." Pet. App. 148a.

2. When the § 101 rejection was made final (PTO Office Action, 3/28/00, pp. 2-5), the Bilski applicants appealed to the PTO Board of Patent Appeals and Interferences under 35 U.S.C. § 134(a) (Notice of Appeal, 4/10/00). The PTO Board had jurisdiction pursuant to 35 U.S.C. § 6(b). An expanded panel of the PTO Board affirmed the rejection in a 70-page opinion. Pet. App. 146a-205a. Admitting that it was "struggling to identify some way to objectively analyze the statutory subject matter issue," *id.* at 154a, the PTO Board analyzed the claims under various

tests. The Board considered this Court's exclusion of "abstract ideas" in *Diamond v. Diehr*, 450 U.S. 175 (1981), the Federal Circuit's "useful, concrete, and tangible result" test from *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), the "transformation of physical subject matter" test discussed by the Board in *Ex parte Lundgren*, 2004 WL 3561262 (B.P.A.I. April 20, 2004), and the PTO's *Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility,* 1300 OFFICIAL GAZETTE U.S. PAT. & TRADEMARK OFF., Nov. 22, 2005, at 142. Pet. App. 180a-190a.

Applying these various tests, the PTO Board concluded that the Bilski claims did not recite statutory subject matter. The Board reversed the examiner's reasoning, however, affirming its earlier holding in *Lundgren* that the "technological arts" is not a separate and distinct test for statutory subject matter. *Id.* at 180a. The Board also refuted the examiner's requirement of a specific apparatus because a claim may still be patent-eligible "if there is a transformation of physical subject matter from one state to another." *Id.* at 181a. Elaborating further, the Board stated: "'mixing' two elements or compounds to produce a chemical substance or mixture is clearly a statutory transformation although no apparatus is claimed to perform the step and although the step could be performed manually." *Id.*

According to the PTO Board, however, the Bilski claims do not involve any patent-eligible transformation because they only transform "non-physical financial risks and legal liabilities of the commodity provider, the consumer, and the market participants." *Id.* at 182a. The Board concluded that the claims merely recite an "abstract idea" since they are not "instantiated in some physical way so as to become a practical application of the idea." *Id.* at 184a. Recognizing that actual physical acts of individuals or organizations would still be required to implement the steps of the method, the Board nevertheless held that the claims were directed to the "'abstract idea' itself" because they cover every possible way of performing those steps. *Id.*

C. The Federal Circuit's En Banc Decision

The Bilski applicants appealed the PTO Board's decision to the U.S. Court of Appeals for the Federal Circuit under 35 U.S.C. § 141. The Federal Circuit had jurisdiction over the appeal pursuant to 28 U.S.C. § 1295(a)(4)(A). After argument before a panel of the court, but before any decision, the Federal Circuit ordered that the appeal would be heard en banc. Pet. App. 144a.

1. In the en banc decision, the Federal Circuit majority held that Bilski's claims are not eligible for patenting and set forth a single, "definitive" test for determining whether a process is patent-eligible under § 101: a process is patent-eligible only if "(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing." *Id.* at 12a. Although the Supreme Court has twice expressly declined to hold that this so-called "machine-or-transformation" test is the only test for patentable processes under § 101, *see Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 71 (1972), the Federal Circuit majority opinion seized on a sentence from *Diehr*, 450 U.S. at 184, quoted from *Benson*, 409 U.S. at 70, that "[t]ransformation and reduction of an article 'to a different state or thing' is *the* clue to the patentability

of a process claim that does not include particular machines." Pet. App. 12a (emphasis added by Federal Circuit). Taking this Court's description of the machine-or-transformation test as "*the*" clue literally, the majority held that this test was not "optional or merely advisory" but rather "the sole test" for patent-eligible processes. *Id.* at 15a-16a & n.11.

In doing so, the Federal Circuit majority overruled its earlier decisions in *State Street Bank* and *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999), to the extent they relied on a "useful, concrete, and tangible result" as the test for patent eligibility under § 101. This formulation, originally set forth by the en banc Federal Circuit in *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994), was discarded in *Bilski* as "inadequate." Pet. App. 24a. Although *Alappat*, *State Street Bank*, and *AT&T* all contain extensive discussions of the same Supreme Court cases now relied on in support of the mandatory "machine-or-transformation" test, the Federal Circuit observed that "useful, concrete, and tangible result" was "never intended to supplant the Supreme Court's test." *Id.*

The Federal Circuit majority nevertheless acknowledged some doubt about its interpretation of this Court's precedent as dictating that the "machine-or-transformation" test is the sole test for patentable processes. Citing *Diehr*, 450 U.S. at 192, where this Court stated:

> [W]hen a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (*e.g.*, transforming or reducing an article to a different state or

> thing), then the claim satisfies the requirements of § 101.

the majority admitted that "language such as the use of 'e.g.' may indicate the Supreme Court's recognition that the machine-or-transformation test might require modification in the future." Pet. App. 17a-18a n.12. The majority also recognized that this Court "may ultimately decide to alter or perhaps even set aside this test to accommodate emerging technologies." *Id.* at 17a.

2. The Federal Circuit majority's holding that "the machine-or-transformation test is the only applicable test" for patent-eligible processes, *id.* at 34a, provoked several vigorous dissents. Reviewing two centuries of precedent and statutory history, Circuit Judge Newman maintained in dissent that the majority's test is "a new and far-reaching restriction on the kinds of inventions that are eligible to participate in the patent system." *Id.* at 60a. The majority's decision, she wrote, introduces uncertainties that "not only diminish the incentives available to new enterprise, but disrupt the settled expectations of those who relied on the law as it existed." *Id.* at 61a.

Circuit Judge Rader likewise dissented because, in his view, the majority's machine-or-transformation test "disrupts settled and wise principles of law." *Id.* at 134a. In particular, he wrote, "the statute does not mention 'transformations' or any of the other Industrial Age descriptions of subject matter categories that this court endows with inordinate importance today." *Id.* at 142a-143a. According to Judge Rader, the majority's test "propagates unanswerable questions" and "links patent eligibility to the age of iron and steel at a time of subatomic particles and terabytes." *Id.* at 134a, 142a.

Also in dissent, Circuit Judge Mayer wrote that the majority's test is "unnecessarily complex and will only lead to further uncertainty regarding the scope of patentable subject matter." *Id* at 131a. While the PTO and the larger patent community have actively sought guidance from the Federal Circuit on this issue, Judge Mayer contended that "[t]he majority's 'measured approach' to the section 101 analysis . . . will do little to restore public confidence in the patent system." *Id.* at 132a.

SUMMARY OF THE ARGUMENT

1. Section 101 of the Patent Act provides patent eligibility for "any" new and useful process. Consistent with its plain language, this Court has interpreted § 101 to be extremely broad. Moreover, the courts should not place additional limits on patent-eligible subject matter that have not been expressed by Congress. To be sure, natural laws and phenomena can never qualify for patent protection because they cannot be invented at all. And abstract ideas are not eligible either because they are not "useful" and they must be applied to a practical use before they can be patented. But the Federal Circuit has gone much further in limiting patents on processes, holding that the only patent-eligible processes are those that meet the court's mandatory "machine-or-transformation" test.

Requiring a special test for "process" inventions conflicts with the plain language of the statute and this Court's precedents. There is no statutory basis for treating processes differently from the other categories of patentable subject matter. Moreover, the

Court has twice declined to hold that a process must be tied to a machine or transform articles in order to be patentable. By requiring all processes to meet its "definitive" machine-or-transformation test, the Federal Circuit has repudiated this Court's broad, flexible framework for patent subject matter eligibility.

2. The Federal Circuit's "machine-or-transformation" test for process patents not only conflicts with § 101 and this Court's precedents, but it is also inconsistent with the Patent Act's recognition that business methods are eligible for patenting. In 1999, Congress enacted a prior user defense to infringement of business method patent claims to protect those who had mistakenly thought commercialized business methods are not patentable. 35 U.S.C. § 273. In this act, Congress embraced both business methods and the Federal Circuit's *State Street Bank* "useful, concrete, and tangible result" test. The legislative history of § 273 shows that Congress did not intend to limit the defense to only those business methods that are tied to machines or that transform articles. Rather, Congress defined patentable business methods broadly enough to encompass Petitioners' method of hedging consumption risk. In fact, Congress specifically recited financial transactions like Petitioners' risk-hedging method as examples of business methods subject to patenting.

Consequently, in light of § 273, § 101 must be read broadly enough to protect methods of doing business, even if they are not tied to a particular machine and do not transform articles. Under the Federal Circuit's mandatory machine-or-transformation test, however, § 273 would provide a meaningless defense to the infringement of a class of patents that cannot exist. That cannot be what Congress intended, and the Federal Circuit's failure to address this conflict between its decision and the clear legislative intent expressed through the adoption of § 273 warrants reversal.

3. The Federal Circuit's machine-or-transformation test should be rejected because it legislates new public policy and disrupts the settled expectations of thousands of patent owners and inventors. Without new guidance from Congress or this Court, the Federal Circuit has retreated from its formerly technology-neutral position by excluding new and useful business-related processes, which may or may not be implemented on a machine. The Federal Circuit has essentially confined all process patents to manufacturing methods, using a test that may have been appropriate during the Industrial Age but no longer fits our modern information-based economy. In doing so, the Federal Circuit has ventured into territory reserved for the legislature and disrupted the legitimate expectations of patent owners and inventors in their property.

Any concerns over potentially vague or trivial patents for business methods should be addressed by the other requirements for patentability, such as novelty, nonobviousness, and definite claiming. Indeed, limiting patentable processes under § 101 to those that are tied to machines or transform subject matter will do little to combat these types of patents, which also fit into other statutory categories of patent-eligible subject matter. The existing requirements for patentability—properly applied—are better suited than the machine-or-transformation test to prevent the issuance of vague or trivial patents for business methods as well as all other fields.

4. Although abstract ideas, laws of nature, and natural phenomena are not patentable under § 101, this Court has held that a "practical application" of one of these principles may be patented. A tie to a machine or a transformative process is therefore sufficient, but not necessary, to demonstrate a patent-eligible practical application of a principle. The practical application standard has been flexibly applied to a variety of inventions and should continue to be applied here.

Although certain cases have found patent-eligible subject matter where a principle has been practically applied in either an apparatus or a chemical or manufacturing process, nonmanufacturing processes have historically been eligible for patenting under the statute too. The Federal Circuit's mandatory machine-or-transformation test is too restrictive and is unnecessary to prevent patenting abstract ideas or laws of nature. Rather, this Court should reaffirm that a practical application of a principle in an art or process is eligible for patenting.

5. Finally, the Federal Circuit's decision should be reversed because the Bilski application claims patentable subject matter under § 101. Claim 1 does not cover the abstract idea of hedging. It recites a specific series of steps involving the purchase and sale of commodities by an intermediary commodity provider to manage consumption risk costs. Even if claim 1 does include the abstract idea of hedging, it is still patentable because the abstract idea is practically applied. Likewise, the mathematical formula in claim 4, which is used to determine the fixed price for consumer transactions, is practically applied as part of a method of managing weather-related energy price risk costs.

Therefore, the claims in the Bilski application satisfy § 101. All of the claims recite a "process," one of the four enumerated categories of patentable subject matter. To the extent the claims invoke a mathematical principle, the principle is practically applied in a process to a useful end. Because the claims recite patentable subject matter under § 101, the Federal Circuit's decision should be reversed.

ARGUMENT

I. THE FEDERAL CIRCUIT'S MANDATORY "MACHINE-OR-TRANSFORMATION" TEST HAS NO BASIS IN THE PATENT STATUTE AND CONFLICTS WITH THIS COURT'S PRECEDENTS

A. The Plain Language Of The Statute Is Extremely Broad, As This Court Has Repeatedly Held

Section 101 of the Patent Act extends patent protection to "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." 35 U.S.C. § 101. To construe the statute, "we begin, of course, with the language of the statute." *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980). The statutory text uses the expansive modifier "any" to introduce four categories of patent-eligible subject matter: process, machine, manufacture, or composition of matter. The meaning of "any . . . process" is at issue in this case.

A "process" is defined as a "process, art or method . . . includ[ing] a new use of a known process, machine, manufacture, composition of matter, or material." 35 U.S.C. § 100(b). In statutory construction, "unless otherwise defined, words will be interpreted as taking their ordinary, contemporary, common meaning." *Chakrabarty*, 447 U.S. at 308 (quoting *Perrin v. United States*, 444 U.S. 37, 42 (1979)). This Court has more than once cautioned that "courts 'should not read into the patent laws limitations and conditions which the legislature has not expressed.'" *Chakrabarty*, 447 U.S. at 308 (quoting *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 199 (1933)); *see also Diamond v. Diehr*, 450 U.S. 175, 182 (1981).

Consistent with the statutory language and the proscription against reading limitations into the patent laws, this Court has long interpreted § 101 to be extremely broad. *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124, 130 (2001) ("As this Court recognized over 20 years ago in *Chakrabarty*, the language of § 101 is extremely broad."); *see also Chakrabarty*, 447 U.S. at 308 ("Congress plainly contemplated that the patent laws would be given wide scope"); *O'Reilley v. Morse*, 15 How. (56 U.S.) 62, 131 (1854) (Grier, J., dissenting) ("[T]he [patent] statute is as broad as language can make it."). In doing so, the Court has also been informed by congressional intent that statutory subject matter "include anything under the sun that is made by man." *Chakrabarty*, 447 U.S. at 309 (quoting S. REP. NO. 82-1979, at 5 (1952), *as reprinted in* 1952 U.S.C.C.A.N. 2394, 2399; H.R. REP. NO. 82-1923, at 6 (1952)). Like § 101 generally, this Court has also acknowledged that "[t]he statutory definition of 'process' is broad." *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978).

Within the "extremely broad" reach of § 101, "laws of nature, physical phenomena, and abstract ideas have been held not patentable." *Chakrabarty*, 447 U.S. at 309; *see also Diehr*, 450 U.S. at 185. These cannot be patented because "[a] principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right." *Le Roy v. Tatham*, 14 How. (55 U.S.) 156, 175 (1853). Other than prohibiting patenting laws of nature and abstract ideas, however, the courts should not place additional limits on patent-eligible subject matter that have not been expressed by Congress. *See Diehr*, 450 U.S. at 182; *Chakrabarty*, 447 U.S. at 308. That is what the Federal Circuit did here.

B. The Federal Circuit's Mandatory "Machine-Or-Transformation" Test Conflicts With This Court's Precedents

1. The Federal Circuit Erred By Adopting An Exclusion To Patentable Subject Matter That This Court Has Twice Rejected

To this Court's prohibition against patenting laws of nature, physical phenomena, and abstract ideas, the Federal Circuit has now added another exclusion: processes that do not satisfy its machine-or-transformation test. "[T]he machine-or-transformation test is the only applicable test and must be applied . . . when evaluating the patent-eligibility of process claims." Pet. App. 34a.

The Supreme Court has twice expressly declined to hold that the "machine-or-transformation" test is the only test for determining whether a process is patentable under § 101, as the Federal Circuit majority has now done. In *Gottschalk v. Benson,* 409 U.S. 63, 71 (1972), the Court wrote:

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a

> "different state or thing." We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.

The Court reaffirmed this position in ***Flook***:

> The statutory definition of "process" is broad. An argument can be made, however, that this Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a "different state or thing." As in *Benson*, we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents.

437 U.S. at 588 n.9 (citations omitted).

The Federal Circuit acknowledged that this Court has twice declined to hold that a process must be tied to a machine or transform articles in order to be patentable. Pet. App. 15a-16a. Nonetheless, the *Bilski* majority seized on a passage from *Diehr* in which the Court repeated a quote from *Benson*: "[t]ransformation and reduction of an article 'to a different state or thing' is *the* clue to the patentability of a process claim that does not include particular machines." Pet. App. 15a-16a (quoting *Benson*, 409 U.S. at 70) (emphasis added by Federal Circuit). But the Supreme Court, in the case being quoted, expressly *did not hold* that a process must be tied to a machine or transform articles to be eligible for patenting. *Benson*, 409 U.S. at 71. And the Court in *Diehr* cited the transformation test as only an example (using the signal '*e.g.*') of how a process could satisfy § 101. 450 U.S. at 192.

2. The Federal Circuit Erred By Subjecting Processes To Additional Conditions For Patent Eligibility

Requiring a special test for the "process" category of inventions conflicts with the plain language of § 101 and this Court's precedents. There is no statutory basis for treating a "process" differently from the other categories of patentable subject matter. The language of section 101—"any" process—"conveys no implication that the Act extends patent protection to some subcategories of processes but not others. It does not mean 'some' or even 'most,' but all." Pet. App. 136a (Rader, J., dissenting).

Even before the term "process" was added to the Patent Act in 1952, "a process . . . historically enjoyed patent protection because it was considered a form of 'art' as that term was used in the 1793 Act." *Diehr*, 450 U.S. at 182. With the addition of the term "process" to § 101, "[a]nalysis of the eligibility of a claim of patent protection for a 'process' did not change." *Id.* at 184.

It is well-settled that an art, or process, enjoys patent protection on par with the other types of subject matter enumerated in the statute. More than one hundred years ago, this Court explained:

> [I]t is only useful arts—arts which may be used to advantage—that can be made the subject of a patent. The language of the [1793] statute is, that "any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter," may obtain a patent therefor. Thus, an art—a process—which is useful, is as much the subject of a patent, as a machine, manufacture, or composition of matter.

> Of this there can be no doubt, and it is abundantly supported by authority.

The Telephone Cases, 126 U.S. 1, 533 (1887) (citing *Corning v. Burden*, 15 How. (56 U.S.) 252, 267 (1854); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1877); *Tilghman v. Proctor*, 102 U.S. 707, 722, 724-25 (1881); *New Process Fermentation Co. v. Maus*, 122 U.S. 413, 427-28 (1887)) (citation omitted).

More recently, this Court has applied the same patent eligibility analysis to process and product claims. For example, in *Benson*, this Court analyzed a process claim using reasoning originally applied to claims to a plant inoculant in *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948). "We dealt [in *Funk Bros.*] with a 'product' claim, while the present case deals with a 'process' claim. But we think the same principle applies." *Benson*, 409 U.S. at 67-68. Without support in the statute or direction from this Court, the Federal Circuit's insistence on a special test for "process" inventions is an error that should be reversed.

3. The Particulars Of The Machine-Or-Transformation Test Compound The Errors In The Decision Below

1. The Federal Circuit's emphasis on the relationship between a process and a machine conflicts with this Court's repeated explanations that a process is patentable irrespective of any tie to a machine. "That a process may be patentable, irrespective of the particular form of the instrumentalities used, cannot be disputed." *Cochrane*, 94 U.S. at 787. As explained in *Corning v. Burden*:

> It is for the discovery or invention of some practicable method or means of producing a beneficial

> result or effect, that a patent is granted, and not for the result or effect itself. It is when the term process is used to represent the means or method of producing a result that it is patentable, and it will include all methods or means which are not effected by mechanism or mechanical combinations.

56 U.S. at 268; *see also New Process Fermentation Co.*, 122 U.S. at 427 ("[T]he method or art . . . of the patent is patentable as a process, irrespective of the apparatus or instrumentality for carrying it out."). A process has been found patentable even when an inventor "testifies that he at first executed his process by hand. Other witnesses . . . say that they could do likewise from the information found in the patent. The important thing in this patent is a method of procedure, not the particular means by which the method shall be practised." *Expanded Metal Co. v. Bradford*, 214 U.S. 366, 380-81 (1909).

Rather than requiring a process to be tied to a machine, this Court has distinguished the two categories.

> A machine is a thing. A process is an act, or a mode of acting. The one is visible to the eye, — an object of perpetual observation. The other is a conception of the mind, seen only by its effects when being executed or performed. Either may be the means of producing a useful result.

Tilghman, 102 U.S. at 728. In *O'Reilley v. Morse*, Justice Grier warned in dissent that:

> To look at an art as nothing but a combination of machinery, and give it protection only as such, against the use of the same or similar devices or mechanical equivalents, is to refuse it protection

> as an art. It ignores the distinction between an art and a machine; it overlooks the clear letter and spirit of the statute; and leads to inextricable difficulties.

56 U.S. at 133 (Grier, J., dissenting).

This Court has explained that identifying any means for performing a process is necessary only to show utility, not patent-eligible subject matter:

> The patent for the art does not necessarily involve a patent for the particular means employed for using it. Indeed, the mention of any means, in the specification or descriptive portion of the patent, is only necessary to show that the art can be used; for it is only useful arts—arts which may be used to advantage—that can be made the subject matter of a patent.

The Telephone Cases, 126 U.S. at 533. More recently, this Court noted that Goodyear's process for curing rubber was patentable regardless of the apparatus employed. "The apparatus for performing the process was not patented, and was not material. The patent pointed out how the process could be effected, and that was deemed sufficient." *Diehr*, 450 U.S. at 185 n.8 (quoting *Tilghman*, 102 U.S. at 722).

2. For a process that is not tied to a machine, the Federal Circuit's test requires the transformation of "a particular article into a different state or thing." Pet. App. 12a. By requiring the transformation of physical articles or chemicals, the machine-or-transformation test "links patent eligibility to the age of iron and steel at a time of subatomic particles and terabytes." Pet. App. 134a (Rader, J., dissenting).

Despite acknowledging that "[t]he raw materials of many information-age processes . . . are electronic signals and electronically-manipulated data," the majority below suggested that extending patent-eligible transformations to electronic signals would "expand the boundaries of what constitutes patent-eligible transformations of articles." Pet. App. 29a. On the contrary, this Court recognized the patentability of such "information-age" transformations long ago. Alexander Graham Bell's famed telephone patent claimed a method for modifying an electrical current to send and receive speech. "What Bell claims is the art of creating changes of intensity in a continuous current of electricity . . . and of using that electrical condition thus created for sending and receiving articulate speech telegraphically. For that, among other things, his patent of 1876 was in our opinion issued." *The Telephone Cases*, 126 U.S. at 533-34.

The Federal Circuit's difficulty in applying its machine-or-transformation test to "information-age processes" demonstrates the error of a rigid test for patentable subject matter. A primary strength of the Patent Act is the lack of subject matter exclusions, leaving the door open for emerging technologies. By design, "Congress employed broad general language in drafting § 101 precisely because such inventions are often unforeseeable." *Chakrabarty*, 447 U.S. at 316. As illustrated by Bell's case more than century ago, the Supreme Court's broad framework for patent eligibility is flexible enough to accommodate innovations of every age.

4. The Federal Circuit's Rigid Test For Patentable Subject Matter Repudiates This Court's Broad, Flexible Interpretation of § 101

By requiring a process to meet its "definitive" machine-or-transformation test in order to be eligible for patenting, Pet. App. 12a, the Federal Circuit repudiated this Court's broad, flexible framework for patent subject matter eligibility: "anything under the sun that is made by man" except "laws of nature, natural phenomena, and abstract ideas." *Diehr*, 450 U.S. at 182, 185 (citation omitted).

In recent years, this Court has repeatedly cautioned against adopting special, rigid rules for patent cases where this Court's precedents follow a broader, more flexible framework. In *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722 (2002), this Court rejected the Federal Circuit's attempt to impose an "absolute" bar to the application of the doctrine of equivalents when a patent claim is narrowed during prosecution. Although this Court had previously applied the doctrine in a consistently flexible way, the Federal Circuit concluded that the flexible approach was "unworkable because it leads to excessive uncertainty and burdens legitimate innovation." *Festo*, 535 U.S. at 737. This Court unanimously rejected the Federal Circuit's "absolute bar" rule, warning that "courts must be cautious before adopting changes that disrupt the settled expectations of the inventing community." *Id.* at 739.

In *eBay Inc. v. MercExchange, LLC*, 547 U.S. 388, 393-94 (2006), the Court unanimously rejected the Federal Circuit's attempt to impose a rule "unique to patent disputes, 'that a permanent injunction will issue once infringement and validity have been adjudged.'" Rather than a special rule for patent cases, this Court instructed the Federal Circuit to apply the "traditional principles of equity" to determine when an injunction should issue "in patent disputes no less than in other cases governed by such standards." *Id.* at 394.

In *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), this Court unanimously rejected the Federal Circuit's application of the "teaching, suggestion, or motivation" test as the only test for obviousness under 35 U.S.C. § 103. The Federal Circuit had adopted the so-called TSM test in an attempt to resolve the question of obviousness "with more uniformity and consistency." *Id.* at 399. Rejecting "the rigid approach of the Court of Appeals," this Court noted that its own cases "have set forth an expansive and flexible approach inconsistent with the way the Court of Appeals applied its TSM test here." *Id.* at 415. The Court cautioned that "when a court transforms the general principle into a rigid rule that limits the obviousness inquiry, as the Court of Appeals did here, it errs." *Id.* at 419.

Like its previous attempts to impose rigid rules for patents despite a flexible framework set forth by this Court, the Federal Circuit's mandatory machine-or-transformation test should be reversed.

II. SECTION 101 MUST BE READ BROADLY ENOUGH TO PROTECT "METHOD[S] OF DOING OR CONDUCTING BUSINESS" IN LIGHT OF 35 U.S.C. § 273

A. The Patent Act Expressly Provides For Patents On Business Methods

In 1999, Congress enacted section 273 of the Patent Act, providing a defense to infringement of patents for business methods. 35 U.S.C. § 273(b). The statute broadly defines business methods: "the term 'method' means a method of doing or conducting business." 35 U.S.C. § 273(a)(3). For the defense to apply, the business method must be "commercially used," which the statute defines as "use . . . in connection with an internal commercial use or an actual arm's-length sale or other arm's-length commercial transfer of a useful end result." 35 U.S.C. § 273(a)(1). Like § 101, the text of § 273 makes no mention of methods tied to machines or transforming articles.

Sections 273 and 101 must be read together as part of an harmonious whole. *See FTC v. Mandel Bros., Inc.*, 359 U.S. 385, 389 (1959) (stating courts should "fit, if possible, all parts [of a statute] into an harmonious whole"). "It is a fundamental canon of statutory construction that the words of a statute must be read in their context and with a view to their place in the overall statutory scheme." *Davis v. Mich. Dept. of Treasury*, 489 U.S. 803, 809 (1989). Because § 273 recognizes patent protection for business methods in commercial use, § 101 cannot be construed to exclude them from patent protection.

B. The Machine-Or-Transformation Test For § 101 Disrupts The Balance Struck By Congress When Enacting § 273

1. In *State Street Bank*, the Federal Circuit rejected the "ill-conceived" notion that business methods were excluded from patenting, noting that "[s]ince the 1952 Patent Act, business methods have been, and should have been, subject to the same legal requirements for patentability as applied to any other process or method." 149 F.3d at 1375. In fact, the court noted, "[t]he business method exception has never been invoked by this court, or the CCPA, to deem an invention unpatentable." *Id.* The court also noted the PTO's practice that "[c]laims should not be categorized as methods of doing business. Instead such claims should be treated like any other process claims." *Id.* at 1377 (quoting Examination Guidelines for Computer Related Inventions, 61 Fed. Reg. 7478, 7479 (Feb. 28, 1996)). The court concluded that business methods, like other processes, are patentable under § 101 if they constitute "a practical application of an abstract idea" by producing "a useful, concrete and tangible result." *State Street Bank*, 149 F.3d at 1373. This Court denied certiorari. 525 U.S. 1093 (1999).

Congress took up the issue of business method patenting the following year, noting that the *State Street Bank* case "added to the urgency of the issue," which is "important to many small and large businesses, including financial services, software companies, and manufacturing firms—any business that relies on innovative business processes and methods." H.R. REP. NO. 106-464, at 122 (1999) (Conf. Rep.). Congress understood the Federal Circuit's broad interpretation of § 101 as reaffirming patent protection for processes that produce a useful result. "As the Court [in *State Street Bank*] noted, the reference to the business method exception had been *improperly applied* to a wide variety of processes, blurring the essential question of whether the invention produced a 'useful, concrete, and tangible result.'" 145 CONG. REC. 29272 (1999); H.R. REP. NO. 106-464, at 122 (1999) (Conf. Rep.) (emphasis added).

Although several members urged Congress to do more "to address the boundaries of the State Street decision,"[2] Congress did not amend the Patent Act to limit patent eligibility for business methods. Instead, Congress enacted § 273, striking "an equitable balance between the interests of U.S. inventors who have invented and commercialized business methods and processes, many of which until recently were thought not to be patentable, and U.S. or foreign inventors who later patent the methods and processes." H.R. REP. NO. 106-464, at 121 (1999) (Conf. Rep.).

2. The legislative history of § 273 shows that Congress did not intend to limit the defense to only those business methods that are tied to machines or that transform articles. Rather, Congress defined patentable business methods in broad enough terms to encompass Petitioners' method of hedging consumption risk. Congress applied the defense to all business methods, "whether in the form of physical products, or in the form of services, or in the form of some other useful results; for example, results pro-

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[2] 145 CONG. REC. 30634 (1999) (statement of Sen. Torricelli); *see also* 145 CONG. REC. 30703 (1999) (statement of Rep. Nadler) ("I believe that it is time for Congress to take a closer look at the State Street decision.").

duced through the manipulation of data or other inputs to produce a useful result." 145 CONG. REC. 29272 (1999).

Like § 101 itself, Congress intended the language of § 273 to be broad. "As used in this legislation, the term 'method' is intended to be construed broadly . . . . '[M]ethod' includes any internal method of doing business, a method used in the course of doing or conducting business, or a method for conducting business in the public marketplace. It includes a practice, process, activity, or system that is used in the design, formulation, testing, or manufacture of any product or service." 145 CONG. REC. 30703 (1999) (statement of Rep. Nadler); 145 CONG. REC. 30634 (1999) (statement of Sen. Schumer); *see also* 145 CONG. REC. 31007 (1999) (statement of Sen. DeWine) ("A method is any systematic way of accomplishing a particular business goal.").

3. Congress recognized the special importance of business method patents and the prior user defense to the financial services industry, which includes Petitioners' consumption risk hedging method. "The *State Street* decision has brought [the financial services] industry abruptly to the forefront of cutting-edge patent law protection . . . ." H.R. REP. NO. 106-287, pt. 1, at 46 (1999). In fact, Congress specifically recited financial transactions like Petitioners' risk-hedging method as examples of business methods subject to patenting. "These financial services may embody business methods or processes incorporated into any number of systems including, but not limited to, trading, investment and liquidity management, securities custody and reporting, balance reporting, funds transfer, ACH, ATM processing, on-line banking, check processing, and compliance and risk man-

agement." *Id.* at 47; *see also* 145 CONG. REC. 31007 (1999) (statement of Sen. DeWine) ("In the context of the financial services industry, methods would include financial instruments (e.g., stocks, bonds, mutual funds), financial products (e.g., futures, derivatives, asset-backed securities), financial transactions, the ordering of financial information, [and] any system or process that transmits or transforms information with respect to eventual investments or financial transactions . . . .").

4. Far from harmonizing its § 101 jurisprudence with § 273, the Federal Circuit ignored Congress's acknowledgement of the "useful, concrete, and tangible result" test and instead overruled the decisions adopting it. Pet. App. 22a-24a & n.19 (concluding that "the 'useful, concrete and tangible result' inquiry is inadequate" and instructing that "those portions of our opinions in *State Street* and *AT&T* relying solely on a 'useful, concrete and tangible result' analysis should no longer be relied on"). In fact, the majority below failed to mention § 273 at all. Despite denouncing the portion of the *State Street Bank* decision that Congress had embraced, the decision claimed to reaffirm that business methods remain patentable under the machine-or-transformation test. *Id.* at 25a.

But in reality, the PTO and the courts have applied the new machine-or-transformation test to reject or invalidate business method claims in dozens of cases. *See, e.g.*, Pet. Reply Br. 6-7. Invalidating a patent for a method of detecting fraudulent credit card transactions, District Judge Marilyn Patel noted that, "[a]lthough the majority declined [to] say so explicitly, *Bilski*'s holding suggests a perilous future for most business method patents." *CyberSource Corp. v. Retail*

Decisions, Inc., 2009 WL 815448, at *9 (N.D. Cal. Mar. 27, 2009). Indeed, she continued, "[t]he closing bell may be ringing for business method patents, and their patentees may find they have become bagholders," just like "shareholder[s] left holding shares of worthless stocks." *Id.* at *10 & n.16.

Under the mandatory application of the machine-or-transformation test, § 273 would provide a meaningless defense to the infringement of a class of patents that cannot exist. That cannot be what Congress intended, and the Federal Circuit's failure to address this conflict between its decision and the clear legislative intent expressed through the adoption of § 273 warrants reversal.

C. *J.E.M. Ag Supply* Illustrates The Proper Way To Harmonize § 101 With Other Parts Of The Patent Act

1. In *J.E.M. Ag Supply,* the alleged infringer of a patent for a newly-developed plant argued that the patent was invalid under § 101 because Congress provided patent protection for plants under two other statutes. 534 U.S. at 127. That argument required the Court to consider the proper interpretation of § 101 in light of the settled PTO practice of issuing utility patents for plants and congressional amendments to another section of the Patent Act. The Court began by reaffirming its earlier precedent holding that "the language of § 101 is extremely broad" and rejecting "the argument that Congress must expressly authorize protection for new patentable subject matter." 534 U.S. at 130.

The Court in *J.E.M. Ag Supply* observed that the PTO had adopted a settled practice of issuing utility patents for plants after the *Chakrabarty* decision. *Id.*

at 144-45. This "highly visible decision" was relied on by the PTO Board and led to the issuance of some 1,800 utility patents for plants. *Id.* at 145. "In the face of these developments," this Court found it significant that "Congress has . . . failed to pass legislation indicating that it disagrees with the PTO's interpretation of § 101" allowing for utility patents in this area. *Id.* The *J.E.M. Ag Supply* Court noted that Congress "has even recognized the availability of utility patents for plants" under § 101 based on a 1999 amendment to another provision of the Patent Act concerning the right of priority, 35 U.S.C. § 119. *Id.* "Crucially, § 119(f) is part of the general provisions of Title 35, not the specific chapter of the [Plant Patent Act], which suggests a recognition on the part of Congress that plants are patentable under § 101." *Id.* In view of the PTO's history of issuing patents for plants, Congress's failure to indicate its disagreement with the practice, and a relevant amendment to another section of the Patent Act, the Court "decline[d] to narrow the reach of § 101 where Congress has given us no indication that it intends this result." *Id.* at 145-46.

2. In the present case, the Federal Circuit was faced with a remarkably similar situation but reached the opposite conclusion, narrowing the scope of § 101 despite previously settled PTO practice and congressional acknowledgement of business method patents in § 273. The highly visible *State Street Bank* decision reflected the PTO's practice of issuing business method patents based on the "useful, concrete and tangible result" standard. *See, e.g.*, Examination Guidelines for Computer Related Inventions, 61 Fed. Reg. 7478, 7479 (Feb. 28, 1996); *Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility*, 1300 OFFICIAL GAZETTE

U.S. PAT. & TRADEMARK OFF., Nov. 22, 2005, at 142. The PTO Board affirmed the patentability of processes with no ties to machines or physical transformation. *See, e.g.*, *Ex parte Lundgren*, 76 U.S.P.Q.2d 1385, 2004 WL 3561262 (B.P.A.I. April 20, 2004).

In the ten years since *State Street Bank*, the PTO has issued more than 15,000 patents classified in the "business methods" technology group. As in *J.E.M. Ag Supply*, Congress has given no indication that it disagrees with the PTO practice of issuing patents for business methods under the *State Street Bank* standard. Several Congresses have considered bills to curtail business method patenting, but none has been enacted. *See* H.R. 5364, 106th Cong. (2000); H.R. 1332, 107th Cong. (2001); H.R. 5299, 108th Cong. (2004). As this Court reaffirmed in *J.E.M. Ag Supply*, where Congress has declined to place limitations on patent-eligible subject matter, the courts should not impose them. 534 U.S. at 145-46; *see also Diehr*, 450 U.S. at 182; *Chakrabarty*, 447 U.S. at 308.

3. While leaving § 101 untouched in light of these developments, Congress added § 273 to the Patent Act to provide a defense to infringement of patents for "method[s] of doing or conducting business." In *J.E.M. Ag Supply*, this Court found an amendment to a general provision of the Patent Act indicative of congressional recognition of patentable subject matter under § 101. 534 U.S. at 145. Contrary to this Court's guidance in *J.E.M. Ag Supply*, and despite settled PTO practice and congressional intent to the contrary, the Federal Circuit adopted a mandatory machine-or-transformation test for § 101 that is inconsistent with § 273.

Where there is ambiguity in statutory meaning, the "statutes must be construed in their entirety, so that the meaning of one provision sheds light upon the meaning of another." *J.E.M. Ag Supply*, 534 U.S. at 146 (Scalia, J., concurring). Here, in its effort to "clarify the standards applicable in determining whether a claimed method constitutes a statutory 'process' under § 101," Pet. App. 2a, the Federal Circuit erroneously restricted § 101 to exclude methods of doing business as set forth in § 273.

III. THE FEDERAL CIRCUIT'S DECISION IMPROPERLY LEGISLATES NEW PUBLIC POLICY AND DISRUPTS THE SETTLED EXPECTATIONS OF PATENT OWNERS AND INVENTORS

The decision below marks an abrupt change in the law, imposing "a new and far-reaching restriction on the kinds of inventions that are eligible to participate in the patent system." Pet. App. 60a (Newman, J., dissenting). Without new guidance from Congress or this Court, the Federal Circuit has retreated from its formerly technology-neutral position that "[t]he use of the expansive term 'any' in § 101 represents Congress's intent not to place any restrictions on the subject matter for which a patent may be obtained beyond those specifically recited in § 101 and the other parts of Title 35." *Alappat*, 33 F.3d at 1542. This reversal is contrary to "U.S. law and policy [that] have embraced advances without regard to their subject matter." Pet. App. 137a (Rader, J., dissenting). Moreover, sections of the Patent Act other than § 101, such as those requiring definite claiming and nonobviousness, are better-suited to prevent the issuance of vague or trivial patents sometimes labeled as "business methods."

1. The "machine-or-transformation" test changes the law by excluding "many of the kinds of inventions that apply today's electronic and photonic technologies, as well as other processes that handle data and information in novel ways. Such processes have long been patent eligible, and contribute to the vigor and variety of today's Information Age." Pet. App. 60a (Newman, J., dissenting). Innovation in the knowledge economy thrives beyond the traditional manufacturing and engineering fields and includes new and useful business-related processes, which may or may not be implemented on a machine.

This Court has long recognized that policy considerations should be left to Congress:

> An examination of the extent of the right to process patents requires consideration of the object and purpose of the Congress in exercising the constitutional power to protect for a limited period meritorious inventions or discoveries.
>
> [The 1793 statute] provides: 'Any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement thereof . . . may . . . obtain a patent therefor.'
>
> This is the statute which secures to inventors the right of protection; and it is not the province of the courts to so limit the statute as to deprive meritorious inventors of its benefits.

Expanded Metal Co., 214 U.S. at 382. More recently, the Court reaffirmed the proper role of courts in interpreting § 101:

> "[Our] individual appraisal of the wisdom or unwisdom of a particular [legislative] course . . . is

> to be put aside in the process of interpreting a statute." Our task, rather, is the narrow one of determining what Congress meant by the words it used in the statute; once that is done our powers are exhausted. Congress is free to amend § 101 . . . [b]ut, until Congress takes such action, this Court must construe the language of § 101 as it is.

Chakrabarty, 447 U.S. at 318 (internal citations omitted).

2. The machine-or-transformation test introduces uncertainties that "not only diminish the incentives available to new enterprise, but disrupt the settled expectations of those who relied on the law as it existed." Pet. App. 61a (Newman, J., dissenting). The mandatory "machine-or-transformation" test calls into question countless process patents issued before the PTO and Federal Circuit began applying this more restrictive test.

This Court has more than once admonished that "courts must be cautious before adopting changes that disrupt the settled expectations of the inventing community." *Festo*, 535 U.S. at 739 (citing *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 28 (1997)). Congressional action is required to change such well-settled rules because "[f]undamental alterations in these rules risk destroying the legitimate expectations of inventors in their property." *Id.* at 739.

Like the doctrine of equivalents issue in *Festo*, the patentability of processes that apply a fundamental principle to produce a useful result was settled. Business methods were patentable before *State Street Bank*, and they remain patentable in accordance with

Congress's intent, as evidenced by 35 U.S.C. § 273. *See, e.g., State Street Bank*, 149 F.3d at 1375 ("Since the 1952 Patent Act, business methods have been, and should have been, subject to the same legal requirements for patentability as applied to any other process or method."). Tens of thousands of patents have issued for business methods, software and information processes, and biotechnology methods. Just as this Court warned in *Festo*, "[t]o change so substantially the rules of the game now could very well subvert the various balances the PTO sought to strike when issuing the numerous patents which have not yet expired and which would be affected by our decision." 535 U.S. at 739 (quoting *Warner-Jenkinson*, 520 U.S. at 32 n.6). By requiring that process patents produce some physical transformation or be tied to a machine, the Federal Circuit has ventured into territory reserved for the legislature and disrupted the settled expectations of patent owners and inventors alike.

3. Critics of business method patents often invoke trivial patents to explain why patentable subject matter should be restricted. For example, Circuit Judge Mayer in dissent below argues for the reversal of *State Street Bank*, citing several "[p]atents granted in the wake of *State Street* [that] have ranged from the somewhat ridiculous to the truly absurd." Pet. App. 119a (Mayer, J., dissenting). These and other trivial patents may well deserve elimination from patent protection, but the machine-or-transformation test would not achieve that end. Many of the patents listed by Judge Mayer claim particular machines like databases and controller units, U.S. Patent No. 5,862,223 (filed July 24, 1996); point-of-sale terminals, U.S. Patent No. 6,119,099 (filed Aug. 26, 1997); and data processing systems and public

communication networks, U.S. Patent No. 6,014,643 (filed Aug. 26, 1996). Limiting patentable processes under § 101 to those that are tied to machines or transform subject matter will therefore do little to combat these types of patents.

Other requirements for patentability, such as novelty and nonobviousness, are better tools for eliminating trivial patents. Even if an invention covers patentable subject matter under § 101, it still must satisfy "the conditions and requirements of this title." 35 U.S.C. § 101. These "[c]onditions for patentability" include novelty, 35 U.S.C. § 102, and nonobvious subject matter, 35 U.S.C. § 103. These requirements provide the PTO and the courts with powerful tools to combat trivial patents. For example, as this Court explained in *KSR*, § 103 bars patents for improvements that result from mere "common sense" or "ordinary creativity." 550 U.S. at 420-21.

Members of this Court have expressed concern over business method patents for their "potential vagueness and suspect validity." *eBay*, 547 U.S. at 397 (Kennedy, J., concurring). Restricting § 101 with the mandatory machine-or-transformation test is not the best way to address these concerns. Rather, § 112 of the Patent Act requires precision in both a patent's specification and its claims. Under these requirements, "[t]he specification shall contain a written description of the invention, and of the manner and process of making and using it, in . . . full, clear, concise, and exact terms." 35 U.S.C. § 112, ¶ 1. Moreover, the patent application must include "one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112, ¶ 2.

When a fundamental principle is involved, this Court has explained that precise description is essential. "[T]he process through which the new property is developed and applied must be stated, with such precision as to enable an ordinary mechanic to construct and apply the necessary process." *Le Roy*, 14 How. (55 U.S.) at 175. Indeed, rather than lacking patentable subject matter, Samuel Morse's famed claim to the use of electro-magnetism for printing letters at a distance was rejected for being overbroad, which today would fall under § 112, not § 101. *Morse*, 15 How. (56 U.S.) at 113 ("The court is of the opinion that the claim is too broad, and not warranted by law."). Similarly, in *Benson*, the Court expressed concern over the broad nature of a claim involving a mathematical algorithm: "Here the 'process' claim is so abstract and sweeping as to cover both known and unknown uses of the BCD to pure binary conversion." 409 U.S. at 68. Proper application of the existing requirements of a detailed description and definite claiming are better suited than the machine-or-transformation test to prevent the issuance of vague patents for business methods as well as all other fields.

IV. THIS COURT SHOULD REAFFIRM THE "PRACTICAL APPLICATION" RULE FOR INVENTIONS INVOLVING FUNDAMENTAL PRINCIPLES

Over a long line of cases, this Court has explained that abstract ideas, laws of nature, and natural phenomena are not patentable under § 101, but a practical application of one of these principles may be patented. *See, e.g.*, *Diehr*, 450 U.S. at 187 ("It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection."); *Funk Bros.*, 333 U.S. at 130 ("If there is to be invention from such a discovery, it must come from the *application* of the law of nature to a new and useful end.") (emphasis added). This Court's precedents analyzing the practical application of otherwise unpatentable principles stretch back more than 150 years. The "practical application" standard has been flexibly applied to inventions ranging from a process for modifying electronic current to transmit speech, *The Telephone Cases*, 126 U.S. 1 (1887), to a process for preserving beer, *New Process Fermentation Co. v. Maus*, 122 U.S. 413 (1887), and from Morse's telegraph dictionary, *O'Reilley v. Morse*, 15 How. (56 U.S.) 62 (1854), to genetically-engineered microorganisms that consume oil spills, *Diamond v. Chakrabarty*, 447 U.S. 303 (1980).

In certain cases, to be sure, the Court has found patent-eligible subject matter where a principle has been practically applied in either an apparatus or a chemical or manufacturing process. *See, e.g., Diehr*, 450 U.S. at 191-93; *Mackay Radio & Tel. Co. v. Radio Corp. of Am.*, 306 U.S. 86, 94 (1939). But the Federal Circuit majority mistakenly concluded that these conditions are not only sufficient, but necessary. Pet. App. 34a. This abruptly changed the law, unsettling the property rights of patent owners and inventors who had relied on years of this Court's jurisprudence.

A. This Court Has Applied Its "Practical Application" Standard Consistently With The Language Of § 101

To determine when a principle is applied in a patent-eligible manner, this Court has closely followed the language of § 101 itself. The Court has held that a principle is practically applied for the purposes of patent eligibility when it is applied (1) to a new and useful result; (2) in a particular apparatus or structure; or (3) in a particular art or process. A tie to a machine or a transformative process is therefore sufficient, but not necessary, to demonstrate a patent-eligible practical application of a principle.

1. More than 150 years ago, Chief Justice Taney summarized the law of patent eligibility as follows: "[w]hoever discovers that a certain useful result will be produced, in any art, machine, manufacture, or composition of matter, by the use of certain means, is entitled to a patent for it." *Morse*, 15 How. (56 U.S.) at 119. Provided the inventor describes the "certain means" sufficiently, the Chief Justice continued, "the patent confers on him the exclusive right to use the means he specifies to produce the result or effect he describes . . . ." *Id.* The Court's emphasis on a useful result or effect made any machine or transformation irrelevant. "[I]t makes no difference . . . whether the effect is produced by chemical agency or combination; or by the application of discoveries or principles in natural philosophy known or unknown before his invention; or by machinery acting altogether upon mechanical principles." *Id.*

When later revisiting the scope of patentable subject matter, the Court relied on this summary as a "clear and exact summary of the law [that] affords the key to almost every case that can arise." *Tilghman*, 102 U.S. at 728. The Court in *Tilghman* expounded on the importance of a "useful result": "It is very certain that the means need not be a machine, or an apparatus; it may, as the court says, be a *process* . . . . Either may be the means of producing a useful result." *Id.* (emphasis in original). Over the years, this Court has repeatedly invoked a practical application to a "new and useful end" as a measure of patent-eligibility. *See, e.g., Funk Bros.*, 333 U.S. at 130 ("If there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end."); *New Process Fermentation Co.*, 122 U.S. at 427-28 ("[The process] is the performing of a series of acts upon the beer in the *kraeusen* stage, producing new and useful results in the art of making marketable beer.").

More recently, the Court in *Benson* held claims containing a mathematical formula unpatentable in part because they lacked a "particular end use." 409 U.S. at 64 ("The claims were not limited to any particular art or technology, to any particular apparatus or machinery, or to any particular end use."). There was some initial confusion over this point in the Court's next decision involving § 101. The majority in *Flook* reasoned that the claims in *Benson* had "a specific end use contemplated for the algorithm—utilization of the algorithm in computer programming," 437 U.S. at 590 n.11, but three dissenting Justices disagreed with this characterization, *id.* at 599 (Stewart, J. dissenting). Any confusion was resolved in *Diehr*, where the Court restated the proper test for subject matter containing a principle. "[W]hen a claim recites a mathematical formula (or scientific principle or phenomenon of nature), an inquiry must be made into whether the claim is seeking patent protection for that formula in the abstract. A mathematical formula as such is not accorded the protection of our patent laws." 450 U.S. at 191. The *Diehr* Court went on to explain the link between a practical application and the language of the Patent Act. A claim containing a mathematical formula satisfies § 101 when it "implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect." *Id.* at 192.

2. It is well-settled that an application of a principle in an apparatus or product is patent-eligible. For example, when this Court considered the patentability of a radio antenna with wires angled according to a mathematical formula, the Court explained that, "[w]hile a scientific truth, or the mathematical expression of it, is not patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be." *Mackay Radio*, 306 U.S. at 94. In another example, this Court found a genetically-engineered microorganism eligible for patenting under § 101 because the claim "is not to a hitherto unknown natural phenomenon, but to a non-naturally occurring manufacture or composition of matter—a product of human ingenuity 'having a distinctive name, character [and] use.'" *Chakrabarty*, 447 U.S. at 309-10 (quoting *Hartranft v. Wiegmann*, 121 U.S. 609, 615 (1887)).

3. An application of a principle in an art or process is likewise eligible for patenting. For example, Alexander Graham Bell discovered that changing the intensity of a continuous electric current to correspond exactly to changes in the density of the air caused by the sound of a voice enabled the sound to be transmitted over a distance. "This," wrote the Court, "was his art." *The Telephone Cases*, 126 U.S. at 532. When Bell "devised a way in which these changes in intensity could be made and speech actually transmitted . . . his art was put in a condition for practical use." *Id.* at 532-33. *The Telephone Cases* noted that the connection of a principle to a particular process was key to patentability. "The effect of [the *O'Reilley v. Morse*] decision was, there-

fore, that the use of magnetism as a motive power, without regard to the particular process with which it was connected in the patent, could not be claimed, but that its use in that connection could." 126 U.S. at 534.

Chemical and manufacturing processes applying fundamental principles have long enjoyed patent protection. For example, a process for separating elements of fats and oils was found patent-eligible because the inventor did not claim "a mere principle . . . . He only claims to have invented a particular mode of bringing about the desired chemical union between the fatty elements and water." *Tilghman*, 102 U.S. at 729. In another example, this Court observed that "[i]ndustrial processes [such as processes for curing rubber] have historically been eligible to receive the protection of our patent laws." *Diehr*, 450 U.S. at 184 & n.8.

B. Nonmanufacturing Processes Have Historically Been Eligible For Patenting Under The Statute

The patent system is not limited to manufacturing methods. Unlike the British system of monopolies, which was designed to establish manufacturing in England, the U.S. patent system was created to promote progress in all disciplines and not just methods of manufacturing.

1. The English patent system began as a way to attract industry to Great Britain's otherwise agrarian economy. Because its industry was "far behind the rest of the world," the Crown offered letters of protection to foreign artisans to establish their practice in England. Ramon A. Klitzke, *Historical Background of the English Patent Law*, 41 J. PAT. OFF. SOC'Y,

Sept. 1959, at 615, 623. These letters of protection devolved, however, into "secret negotiations for the purpose of attracting skilled foreigners into [the Crown's] own service." E. Wyndham Hulme, *The History of the Patent System Under the Prerogative and at Common Law*, 12 L. Q. REV. 141, 144 (1896). This practice continued through the 16th century, resulting in "flagrant misuse" including "granting of monopolies in industries which were already established in England." Klitzke, 41 J. PAT. OFF. SOC'Y, at 632-33.

To rein in the abuse of monopolies, the 1624 Statute of Monopolies was enacted to permit a limited 14-year monopoly only for the "true and first inventor" of "any manner of new manufacture." *See* D.F. Renn, *John Knox's Plan for Insuring Lives: A Patent of Invention in 1778*, 101 J. INST. ACTUARIES 285, 285 (1974). Consistent with its earliest goals of promoting new industry in England, the monopoly practice required that an invention be new, at least to the British economy. Edward C. Walterscheid, THE NATURE OF THE INTELLECTUAL PROPERTY CLAUSE: A STUDY IN HISTORICAL PERSPECTIVE 50-51 (1961).

2. The patents and copyrights clause of the Constitution empowers Congress "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." U.S. CONST. art. I, § 8, cl. 8. Though little record exists of the drafting of the clause, the very language selected by the Constitution's framers indicates a broader purpose. Rather than adopting the more limited English "manner of manufacture" to describe subject matter eligible for protection, the framers chose "useful arts." Indeed, a committee of the Con-

stitutional Convention considered, but discarded, the phrase "useful machines and implements." Karl Fenning, *The Origin of the Patent and Copyright Clause of the Constitution*, 11 J. PAT. OFF. SOC'Y 438, 441-42 (1929). Scholars have opined that the departure from the "manufacture" limitation of the Statute of Monopolies indicates the framers' intent to "encourage [ ] science, broadly," unlike the British system. Karl B. Lutz, *Patents and Science: A Clarification of the Patent Clause of the U.S. Constitution*, 18 GEO. WASH. L. REV. 50, 53-54 (1949). One of the reasons for this departure from "manufacture" to "useful arts" was the recognition, "even in Great Britain that the phrase 'new manufactures' was an unduly limited object for a patent system, since it seemed to exclude new processes." *Id.*

Rather than simply establishing a manufacturing industry as in England, the U.S. patent system was designed to advance innovation in the public interest. James Madison wrote of the patents and copyrights clause:

> The utility of this power will scarcely be questioned. The copyright of authors has been solemnly adjudged, in Great Britain, to be a right of common law. The right to useful inventions seems with equal reason to belong to the inventors. The public good fully coincides in both cases with the claims of individuals.

THE FEDERALIST NO. 43, at 267 (James Madison) (H. Lodge ed. 1888). Thomas Jefferson, a vocal critic of monopolies in general, agreed that "[c]ertainly an inventor ought to be allowed a right to the benefit of his invention for some certain time. . . . Nobody wishes more than I do that ingenuity should receive a liberal encouragement." Letter to Oliver Evans (May

1807), 5 WRITINGS OF THOMAS JEFFERSON, at 75-76 (Washington ed.). After U.S. patents began to issue, Jefferson wrote, "[a]n act of Congress authorising the issuing of patents for new discoveries has given a spring to invention beyond my conception." Letter to Benjamin Vaughan (June 1790), 8 WRITINGS OF THOMAS JEFFERSON, at 50 (Andrew A. Lipscomb et al. eds., 1903).

3. Before there were specific procedures for granting patents, inventors applied directly to Congress for protection. The first Congress received fifteen petitions seeking protection for methods and machines such as "the principle of applying steam-power to the purpose of navigation," "an invention . . . for counting, with the utmost precision, the number of revolutions or vibrations of any wheel, or other part of any mechanical engine or machine," "lightning rods upon an improved construction," and "manufacturing shell buttons of different dimensions." P.J. Federico, *The First Patent Act*, 14 J. PAT. OFF. SOC'Y 237, 241-43 (1932).

One of the first petitions sought protection for methods of applying magnetic variation to determine longitude. John Churchman invented "several different methods by which the principles of magnetic variation are so explained, that the latitude of a place being given, its longitude may be easily determined" and petitioned Congress for the exclusive right to sell "spheres, hemispheres, maps, charts, and tables, on his principles of magnetism." *Id.* at 239. Congress found these methods deserving of protection because the inventor applied his ideas in practice. The congressional committee considering Mr. Churchman's invention found it

> confessedly of very high importance, and his ideas on the subject appear to be ingenious: That, with a view of applying them to practice, he has contrived a map and a globe, whereby to show the angles which are made by the intersection of the real and the magnetic meridians in different parts of the earth: That he is also engaged in constructing tables for determining the longitude at sea upon magnetic principles.

Id. The committee decided that "such efforts deserve encouragement, and that a law should pass to secure to Mr. Churchman, for a term of years, the exclusive pecuniary emoluments to be derived from the publication of these several inventions." *Id.* at 240. This example illustrates that the U.S. patent system has long embraced nonmanufacturing methods. Furthermore, when an invention involves a fundamental principle like magnetism, a "practical application" has long been the hallmark of patent eligibility.

4. The first Patent Act provided patent protection for "any useful art, manufacture, engine, machine, or device, or any improvement therein not before known or used." Patent Act of 1790, § 1, 1 Stat. 109. This act codified the framers' intent to provide protection to more than methods of manufacturing.

In 1793, Congress revised the Patent Act, expanding the categories of patentable subject matter to include a "composition of matter." "[A]ny person or persons, being a citizen or citizens of the United States, shall allege that he or they have invented any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement on any art, machine, manufacture, or composition of matter." Patent Act of 1793, § 1, 1 Stat. 318. These statutory categories remained unchanged until

1952, when the word "process" replaced "art." It is well-settled, however, that "a process . . . historically enjoyed patent protection because it was considered a form of 'art' as that term was used in the 1793 Act." *Diehr*, 450 U.S. at 182. As Circuit Judge Newman noted in dissent below, under the 1793 Act, patents have issued for financial methods such as "detecting and preventing counterfeiting, coin counting, [and] interest calculation tables" since the 18th century. Pet. App. 88a (Newman, J., dissenting).

V. THE FEDERAL CIRCUIT'S DECISION SHOULD BE REVERSED BECAUSE THE BILSKI APPLICATION CLAIMS PATENTABLE SUBJECT MATTER

A. Before The PTO And Federal Circuit Started Applying The Machine-Or-Transformation Test, Bilski's Claims Passed The Threshold Of § 101

Under the previously well-settled "practical application" standard, the PTO twice found that Bilski's claims contained patentable subject matter. After searching the prior art and examining the Bilski patent application, the patent examiner determined that some of the claims were patentable over the prior art but rejected others. (PTO Office Action, 3/4/99, pp. 2-4.) In response, the applicants amended the claims, and the examiner again allowed most of them but maintained the prior art rejections of the others. (PTO Office Action, 7/21/99, pp. 2-5.) Then, after twice allowing these claims, the PTO withdrew all of the remaining prior art rejections and instead rejected all of the claims under § 101 as being directed to nonstatutory subject matter. (PTO Office Action, 11/8/99, pp. 2-4.)

Since this Court's decision twenty-eight years ago in *Diehr*, the Federal Circuit has been the arbiter of statutory subject matter under § 101. Under a long line of that court's cases, including the en banc decision in *Alappat,* the Bilski claims would likely have been found patent-eligible. In *Alappat*, the Federal Circuit explained that "[t]he use of the expansive term 'any' in § 101 represents Congress's intent not to place any restrictions on the subject matter for which a patent may be obtained beyond those specifically recited in § 101 and the other parts of Title 35." 33 F.3d at 1542. Surveying *Benson*, *Flook*, and *Diehr*, the Federal Circuit took note of this Court's "practical application" standard. "[C]ertain types of mathematical subject matter, standing alone, represent nothing more than *abstract ideas* until reduced to some type of practical application . . . ." *Id.* at 1543. Accordingly, the court concluded that a rasterizer consisting of a series of circuits that perform mathematical calculations was "not a disembodied mathematical concept which may be characterized as an 'abstract idea,' but rather a specific machine to produce a useful, concrete, and tangible result." *Id.* at 1544.

In 1998, the Federal Circuit again acknowledged that "[t]he repetitive use of the expansive term 'any' in § 101 shows Congress's intent not to place any restrictions on the subject matter for which a patent may be obtained beyond those specifically recited in § 101." *State Street Bank*, 149 F.3d at 1373. The court also acknowledged the Supreme Court's warning that "it is improper to read limitations into § 101 on the subject matter that may be patented where the legislative history indicates that Congress clearly did not intend such limitations." *Id.* The court applied the "practical application" test to conclude that a data processing system that transforms data representing discrete dollar amounts "constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces 'a useful, concrete and tangible result.'" *Id.*

One year later, in *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1358 (Fed. Cir. 1999), the Federal Circuit upheld the patentability of claims to a method for generating message records for interexchange telephone calls. The court reaffirmed that its reasoning in *Alappat* and *State Street Bank* was supported by this Court's decisions in *Diehr*, *Flook*, and *Benson*. Regarding *Alappat*, the *AT&T* court concluded:

> [T]he Alappat inquiry simply requires an examination of the contested claims to see if the claimed subject matter as a whole is a disembodied mathematical concept representing nothing more than a "law of nature" or an "abstract idea," or if the mathematical concept has been reduced to some practical application rendering it "useful."

Id. at 1357. Regarding the *State Street Bank* decision, the *AT&T* court wrote:

> The State Street formulation [is] that a mathematical algorithm may be an integral part of patentable subject matter such as a machine or process if the claimed invention as a whole is applied in a "useful" manner.

Id.

Under the Federal Circuit's jurisprudence interpreting this Court's "practical application" test, the Bilski patent application claims would likely have been found patent-eligible. To the extent the claims involve mathematical calculations, the invention as a whole applies these calculations as part of a process for buying and selling energy commodities, resulting in a balancing of risk involved in the transactions. This practical application of mathematical concepts in a useful process is just the type embraced by the Federal Circuit until it adopted the mandatory machine-or-transformation test.

To rationalize departing from its line of cases interpreting a patent-eligible "practical application" of a fundamental principle, the Federal Circuit has attempted to distinguish the *State Street Bank* and *Alappat* cases as dealing with machines rather than processes. *See, e.g.*, Pet App. 23a n.18; *In re Comiskey*, 554 F.3d 967, 979 n.14 (Fed. Cir. 2009). This marks a reversal in the court's position, which previously maintained that, "for the purposes of a § 101 analysis, it is of little relevance whether [a] claim . . . is directed to a 'machine' or a 'process,' as long as it falls within at least one of the four enumerated categories of patentable subject matter." *State Street Bank*, 149 F.3d at 1372; *see also AT&T*, 172 F.3d at 1357 ("[W]e consider the scope of § 101 to be the same regardless of the form—machine or process—in which a particular claim is drafted.").

B. The Claimed Hedging Method Falls Within One Of The Enumerated Categories Of § 101

Bilski and Warsaw invented a new way to hedge the consumption risk associated with a commodity sold by a commodity provider at a fixed price for a given period. J.A. 11. All of the claims in their patent application recite methods, which are included in the statutory "process" category. 35 U.S.C. § 100(b)

("The term 'process' means process, art or method."). The plain language of § 101 extends patent eligibility to "any" new and useful process. 35 U.S.C. § 101. The meaning of the word "any" is clear, so no further inquiry is necessary under the statute. Except in rare and exceptional circumstances, "[w]hen we find the terms of a statute unambiguous, judicial inquiry is complete." *Garcia v. United States*, 469 U.S. 70, 75 (1984).

It is true that this Court held in *Flook* that "[t]he plain language of § 101 does not answer the question." 437 U.S. at 588. The *Flook* Court reasoned that a purely literal reading of § 101 was foreclosed by the holding in *Benson* that a method for converting binary-coded decimal numbers into binary numbers could not be patented. *Id.* at 588-89. There was some disagreement over this point, however, with the dissenters arguing that "[t]he recent case of [*Benson*] stands for no more than this long-established principle, which the Court there stated in the following words: 'Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work.'" *Flook*, 437 U.S. at 599 (Stewart, J., dissenting) (quoting *Benson*, 409 U.S. at 67). The point was settled when this Court later explained that its holdings in *Benson* and *Flook* "stand for no more than the[] long-established principles" that laws of nature, natural phenomena, and abstract ideas are excluded from patent protection. *Diehr*, 450 U.S. at 185.

C. Claim 1 Does Not Fall Within One Of This Court's Exceptions To Patent-Eligible Subject Matter

Claim 1 does not involve an abstract idea, law of nature, or natural phenomenon. Instead, claim 1 recites a method for buying and selling commodities among commodity consumers, commodity suppliers, and an intermediary called a commodity provider. To hedge the risk of fluctuations in consumption based, for example, on changing weather, the commodity provider offers the commodity at a fixed price to consumers, such as businesses and homeowners. *See supra* p. 7; *see also* J.A. 11-12. The commodity provider then identifies suppliers, called "market participants," that have a risk position counter to that of the energy consumers. The commodity provider enters into transactions with the market participants at a second fixed rate in order to balance the risk of the consumer transactions. *See supra* p. 7.

Some have argued that the claims cover the abstract idea of hedging. For example, the Federal Circuit found that claim 1 "would effectively preempt any application of the fundamental concept of hedging and the mathematical calculations inherent in hedging." Pet. App. 36a. To the contrary, claim 1 is limited to a specific series of steps involving the purchase and sale of commodities involving an intermediary commodity provider that manages consumption risk costs. The applicants do not claim to have invented the concept of hedging, nor does claim 1 cover all applications of hedging. A search of the PTO database reveals dozens of issued patents with the term "hedging" in the title or abstract that would not be covered by claim 1, related to hedging risk in sports wagers, insurance contracts, employee stock options, and the like. Moreover, even if claim 1 does recite an abstract idea, it is still patentable because the abstract idea is practically applied, as shown by an analysis of claim 4.

D. Claim 4 Recites A Practical Application Of A Mathematical Equation

Claim 4 includes a mathematical relationship that is used to determine the fixed price for the consumer transactions in the claimed method. *See supra* pp. 7-8. It is well settled that a practical application of a mathematical formula can be patented. "A claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula . . . ." *Diehr*, 450 U.S. at 176; *see also Mackay Radio*, 306 U.S. at 94.

The mathematical formula of claim 4 is practically applied as part of a process for managing weather-related energy price risk costs. "[W]hen a claim containing a mathematical formula implements or applies that formula in a structure or *process* which, when considered as a whole, is performing a function which the patent laws were designed to protect . . . then the claim satisfies the requirements of § 101." *Diehr*, 450 U.S. at 192 (emphasis added). The method of claim 4 applies the mathematical formula in the practice of energy transactions between consumers, providers, and market participants. The patent application details how the fixed cost offered to consumers is determined based on various expenses related to the energy business, such as variable commodity costs, long distance transportation costs, and local delivery costs. J.A. at 12. To account for weather, the application describes a way to forecast weather-driven consumption using historical averages and statistical modeling techniques. *Id.* at 13.

The mathematical formula of claim 4 is practically applied to a useful result, so it is patentable. *Funk Bros.*, 333 U.S. at 130 ("If there is to be invention from . . . a discovery [of a law of nature], it must come from the application of the law of nature *to a new and useful end*.") (emphasis added). As claim 4 recites, the method is designed to manage weather-related energy price risk costs sold by an energy provider. The claim details a series of transactions for energy consumers to purchase energy at a fixed rate determined by a complex mathematical relationship among factors in the energy business. *See supra* pp. 7-8. To accomplish the end result of balancing the risk positions of the consumer transactions, the claim requires that commodity suppliers, called "market participants" are identified and engaged in transactions. *Id.*

Applying this Court's "practical application" test, the claims in the Bilski patent application satisfy § 101. All of the claims recite a "process," one of the four enumerated categories of patentable subject matter. To the extent the claims involve a mathematical principle, the principle is practically applied in a process to a useful end. Because the claims recite patentable subject matter under § 101, the Federal Circuit's decision should be reversed.

CONCLUSION

The judgment of the court of appeals should be reversed.

Respectfully submitted,

J. MICHAEL JAKES
Counsel of Record
ERIKA H. ARNER
FINNEGAN, HENDERSON,
FARABOW, GARRETT &
DUNNER, L.L.P.
901 New York Avenue, N.W.
Washington, D.C. 20001
(202) 408-4000

RONALD E. MYRICK
DENISE W. DEFRANCO
FINNEGAN, HENDERSON,
FARABOW, GARRETT &
DUNNER, L.L.P.
55 Cambridge Parkway
Cambridge, MA 02142
(617) 452-1600

RESPONDENT'S BRIEF

6C

No. 08-964

In the Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
PETITIONERS

v.

DAVID J. KAPPOS, UNDER SECRETARY OF COMMERCE
FOR INTELLECTUAL PROPERTY AND DIRECTOR,
UNITED STATES PATENT AND TRADEMARK OFFICE

ON WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

BRIEF FOR THE RESPONDENT

CAMERON F. KERRY
General Counsel

QUENTIN A. PALFREY
Associate General Counsel

JOAN BERNOTT MAGINNIS
Assistant General Counsel
U.S. Department of Commerce
Washington, D.C. 20230

RAYMOND T. CHEN
Solicitor and Deputy General Counsel

THOMAS W. KRAUSE
SCOTT C. WEIDENFELLER
Associate Solicitors
U.S. Patent and Trademark Office
Alexandria, VA 22313

ELENA KAGAN
Solicitor General
Counsel of Record

MALCOLM L. STEWART
Deputy Solicitor General

TONY WEST
Assistant Attorney General

GINGER D. ANDERS
Assistant to the Solicitor General

SCOTT R. MCINTOSH
MARK R. FREEMAN
Attorneys

Department of Justice
Washington, D.C. 20530-0001
(202) 514-2217

QUESTION PRESENTED

Whether a method of hedging financial risk that neither concerns the use of a particular machine or apparatus nor effects a transformation of matter into a different state or thing is eligible for patent protection under 35 U.S.C. 101.

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In the Supreme Court of the United States

No. 08-964

BERNARD L. BILSKI AND RAND A. WARSAW,
PETITIONERS

v.

DAVID J. KAPPOS, UNDER SECRETARY OF COMMERCE
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OPINIONS BELOW

The opinion of the court of appeals (Pet. App. 1a-143a) is reported at 545 F.3d 943. The decision of the Board of Patent Appeals and Interferences (Pet. App. 146a-205a) is unreported.

JURISDICTION

The judgment of the court of appeals was entered on October 30, 2008. The petition for a writ of certiorari was filed on January 28, 2009, and was granted on June 1, 2009. This jurisdiction of this Court rests on 28 U.S.C. 1254(1).

CONSTITUTIONAL AND STATUTORY PROVISIONS INVOLVED

Article I, Section 8, Clause 8 of the Constitution provides:

> The Congress shall have Power * * * [t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries[.]

35 U.S.C. 101 provides:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

STATEMENT

This case arises from a decision of the United States Patent and Trademark Office (PTO) rejecting all claims in petitioners' patent application for lack of patent-eligible subject matter under 35 U.S.C. 101. Pet. App. 2a. The en banc court of appeals affirmed. *Id.* at 1a-143a.

1. Petitioners seek to patent a method of hedging various consumer cost risks in the purchase and sale of commodities. Pet. App. 2a-3a; see J.A. 10-23 (U.S. Patent Application No. 08/833,892). Petitioners' claims describe a "risk management method" that would offset consumer cost risks associated with, for example, fluctuations in weather during the winter, "essentially guarantee[ing] the customer a normal winter [by] lock[ing] in a payment stream (a fixed energy bill) for whatever period the consumer wishes." J.A. 11 (Summary of the Invention). This reduction of risk would be accom-

plished by arranging offsetting transactions with "counterparties," such as energy utilities, "that have an opposite appetite for the risk" of weather-related costs. J.A. 14-15.

Claim 1 of petitioners' application encompasses a method for hedging risk in any commodities transaction:

> A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:
>
> (a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer;
>
> (b) identifying market participants for said commodity having a counter-risk position to said consumers; and
>
> (c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions[.]

Pet. App. 2a-3a. The other 10 claims in the application recite more specific variations on this hedging method. *Ibid.*

Although entitled "Energy Risk Management Method," J.A. 10, the patent application's claim language is broad, and stresses that the claimed method is not limited to energy prices or weather risks. "[I]t is to be distinctly understood that the present method can be used for any commodity to manage consumption risk in a fixed bill price product." J.A. 11. In addition, as the court of appeals observed, nothing in the claimed method requires actual commodities to change hands, so that the method can be carried out using options, Pet. App. 3a; nor does the method specify steps for identifying counterparties or carrying out the transactions.

2. The PTO examiner rejected the application for lack of patent-eligible subject matter under 35 U.S.C. 101. Pet. App. 4a. An expanded five-judge panel of the PTO's Board of Patent Appeals and Interferences (Board) affirmed the examiner's decision. *Id.* at 146a-205a. The Board emphasized that petitioners' claims "do not recite any specific way of implementing the steps; do not expressly or impliedly recite any physical transformation of physical subject matter, tangible or intangible, from one state into another; do not recite any electrical, chemical, or mechanical acts or results; * * * and do not involve making or using a machine, manufacture, or composition of matter." *Id.* at 150a. Rather, the claimed method involves only the manipulation of "financial risks and legal liabilities of the commodity provider, the consumer, and the market participants having a counter-risk position to the consumer." *Id.* at 182a. The Board concluded that a process claim of this kind is not patent-eligible under 35 U.S.C. 101. Pet. App. 182a.

The Board also found petitioners' hedging method unpatentable on the independent ground that the claimed method is so broad as to preempt "any and every possible way of performing the steps of the plan" for managing consumption risk. Pet. App. 184a. Stressing that the claims involve no specific physical steps or other concrete limitations, the Board concluded that the claim is "directed to the 'abstract idea' [of hedging consumption risk] itself, rather than a practical implementation of the concept." *Ibid.*

3. a. Petitioners appealed to the United States Court of Appeals for the Federal Circuit. See 35 U.S.C. 141. After briefing and argument before a three-judge panel, but before the panel issued a decision, the court of appeals *sua sponte* ordered that the appeal be heard en banc. Pet. App. 144a. The court directed the parties to file supplemental briefs addressing, *inter alia*, whether the court should reconsider or overrule *State Street Bank & Trust Co.* v. *Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), cert. denied, 525 U.S. 1093 (1999), and *AT&T Corp.* v. *Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir.), cert. denied, 528 U.S. 946 (1999), the cases on which many patent applicants had relied in urging that any series of steps having a "useful, concrete, and tangible result" qualifies as a patent-eligible process. Pet. App. 144a-145a.

b. The en banc court of appeals affirmed the Board's decision. Pet. App. 1a-143a. After reviewing this Court's precedents discussing the patent eligibility of processes, *id.* at 7a-12a, the court concluded that a claimed process qualifies for patent protection if "(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing." *Id.* at 12a; see *id.* at 12a-13a (citing *Diamond* v. *Diehr*, 450 U.S. 175, 192 (1981); *Parker* v. *Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk* v. *Benson*, 409 U.S. 63, 70 (1972); *Cochrane* v. *Deener*, 94 U.S. 780, 788 (1877)). The court of appeals observed that this Court had applied the "machine-or-transformation test" in *Diehr*, and that such an approach is consistent with this Court's earlier decisions construing Section 101 and its predecessor provisions. Pet. App. 14a & n.8; see *id.* at 15a-16a ("[t]ransformation and reduction of an article 'to a different state or thing' is *the* clue to the patentability of a process claim that does not include particular machines") (quoting *Benson*, 409 U.S. at 70, and *Cochrane*, 94 U.S. at 788) (emphasis added by court of appeals); *id.* at 16a-17a (same) (quoting *Diehr*, 450 U.S. at 184). The court recognized that "future developments in technology and the sciences may present difficult challenges" in applying that test, and acknowledged the possibility that the Federal Circuit (or this Court) "may in the future refine or augment the test or how it is applied." *Id.* at 17a. The court of appeals stated, however, that "for the present case" the machine-or-transformation test is controlling. *Id.* at 17a & n.12.

The court of appeals also identified two "corollary" principles, each drawn from this Court's cases, governing application of the machine-or-transformation test. First, "mere field-of-use limitations are generally insufficient to render an otherwise ineligible process claim patent-eligible." Pet. App. 18a (citing *Diehr*, 450 U.S. at 191-192). Second, "insignificant post[-]solution activity will not transform an unpatentable principle into a patentable process." *Id.* at 19a (quoting *Diehr*, 450 U.S. at 191-192); *ibid.* (citing *Flook*, 437 U.S. at 590).

The court of appeals rejected statements in its own decisions that were inconsistent with the machine-or-transformation test. Pet. App. 21a-27a. In particular, the court revisited the oft-quoted language in *State Street Bank* and related cases suggesting that any process that yields a "useful, concrete and tangible result" is eligible for patent protection. *State Street Bank*, 149 F.3d at 1373; see Pet. App. 22a-23a (collecting cases). The court explained (*id.* at 23a-24a) that, although that formulation "may in many instances provide useful indications of whether a claim is drawn to a fundamental principle or a practical application of such a principle" (by which the court meant "laws of nature, natural phenomena, and abstract ideas," *id.* at 8a n.5), the "result" standard is not by itself sufficient to distinguish patent-eligible from ineligible processes.

The court of appeals concluded that petitioners' claimed hedging method "entirely fails the machine-or-transformation test." Pet. App. 32a. The court stressed that the claimed process does not transform matter into a different state or thing, but at most involves modifications "of public or private legal obligations or relationships, business risks, or other such abstractions." *Ibid.* The court further explained that petitioners' claims do not require the use of any particular machine or apparatus. *Ibid.* The court also stated that "claim 1 would effectively pre-empt any application of the fundamental concept of hedging" the consumer cost risk of a commodity. *Id.* at 36a. Accordingly, the court concluded that petitioners' "claim is not drawn to patent-eligible subject matter under [Section] 101." *Id.* at 37a.

c. Judge Dyk, joined by Judge Linn, filed a concurring opinion reviewing the history of Section 101. Pet. App. 38a-59a. The concurring judges concluded that "the unpatentability of processes not involving manufactures, machines, or compositions of matter has been firmly embedded in the statute since the time of the Patent Act of 1793." *Id.* at 38a. Those judges stressed in particular that "[t]here is no suggestion in any of this early [history] of process patents that processes for organizing human activity were or ever had been patentable." *Id.* at 50a.

d. Judges Newman (Pet. App. 60a-105a), Mayer (*id.* at 106a-133a), and Rader (*id.* at 134a-143a) filed separate dissenting opinions. Of the dissenters, only Judge Newman would have held petitioners' claims patent- eligible under Section 101, on the ground that they described "a 'process' set out in successive steps," and did not preempt a fundamental principle. See *id.* at 100a-101a; *id.* at 104a. Judge Mayer would have held that process claims "directed to a method of conducting business," including petitioners' claims, are categorically ineligible for patent protection. *Id.* at 106a. Judge Rader would have rejected petitioners' application solely on the ground that it seeks to patent an abstract idea. *Id.* at 134a; see *id.* at 139a.

SUMMARY OF ARGUMENT

This case presents the question whether petitioners' claimed hedging method is a patent-eligible "process" under 35 U.S.C. 101. Interpreted in light of the historical scope and development of the patent laws, as well as the statutory context, the term "process" encompasses all technological and industrial processes, broadly conceived. But it does not extend patent-eligibility beyond those bounds, to methods of organizing human activity that are untethered to technology—*e.g.*, methods by which people conduct economic, social, or legal tasks, such as entering into contracts, playing poker, or choosing a jury. Such methods fall outside of the broad expanse of technological and industrial fields that "the statute was enacted to protect." *Parker* v. *Flook*, 437 U.S. 584, 593 (1978). Because petitioners' hedging method relates solely to human conduct, untethered to any technology—any machine or transformation of matter—it falls outside the coverage of Section 101.

1. The historical understanding of the term "process" and its statutory precursor "art" demonstrates that technological and industrial processes are the "types which have historically been eligible to receive the protection of our patent laws." *Diamond* v. *Diehr*, 450 U.S. 175, 184 (1981). Methods of organizing human activity are not patent-eligible "process[es]" within the meaning of Section 101. When Congress enacted the initial patent statutes in 1790 and 1793, the processes deemed eligible for patent protection were those involving the "useful arts"—namely, the fields of technology and industry, as opposed to the fields of general knowledge and economic endeavor. This Court and others applied that approach, emphasizing the technological nature of patent-eligible processes, through the enactment of the current statute, the Patent Act of 1952, 35 U.S.C. 1 *et seq.* The statutory context confirms this understanding of "process," as the term appears together with other categories of patent-eligible subject matter—machines, compositions of matter, and manufactures—that "are things made by man[,] and involve technology." Pet. App. 194a.

This Court has long recognized that the distinguishing feature of a technological process is that it concerns a particular machine or apparatus or effects a transformation of matter to a different state or thing. See, *e.g.*, *Diehr*, 450 U.S. at 184; *Cochrane* v. *Deener*, 94 U.S. 780 (1877). That understanding of the term "process" in Section 101 continues to provide an appropriate framework for distinguishing methods that involve technology—including claims concerning software and other modern technologies—from those that do not. In contrast, petitioners' proposed definition, which would encompass any series of steps culminating in a useful result, whether or not technological in nature, Pet. Br. 43-44, would permit patents for a vast swath of human activities far removed from the essential purposes and historical scope of the patent laws.

II. Congress's enactment of 35 U.S.C. 273 does not suggest that methods of organizing human activity are patent-eligible "processes" under Section 101. Congress enacted Section 273 in response to *State Street Bank & Trust Co.* v. *Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), which held that inventions that otherwise satisfy Section 101's requirements should not be excluded from patent protection simply because they relate to business activities. Section 273 provides an affirmative defense to protect businesses that had been using methods previously regarded as unpatentable. Congress's decision to limit the practical impact of *State Street* in that manner does not suggest that Congress viewed *State Street* as extending patent protection to non-technological methods of organizing human activity, much less that it approved or impliedly ratified such a drastic expansion of patent-eligible subject matter.

III. Petitioners' method for hedging risk in the purchase and sale of commodities—a technique for organizing human activity untethered to technology—is not a "process" eligible for patent protection under 35 U.S.C. 101. Petitioners' claimed method is not directed to the operation of a particular machine or apparatus, nor does it involve the transformation of matter into a different state or thing. Petitioners' hedging method is also ineligible for a patent on the independent ground that it would preempt the abstract idea of hedging consumption risk.

ARGUMENT

I. SECTION 101 PROTECTS INDUSTRIAL AND TECHNOLOGICAL PROCESSES, AND IT EXCLUDES METHODS DIRECTED TO ORGANIZING HUMAN ACTIVITY

A. Section 101 Sweeps Broadly But Imposes Meaningful Limits On The Scope Of Patent Protection

1. The Patent Clause of the Constitution authorizes Congress "[t]o promote the Progress of * * * useful Arts, by securing for limited Times to * * * Inventors the exclusive Right to their * * * Discoveries." U.S. Const. Art. 1, § 8, Cl. 8. Congress has exercised that authority in the Patent Act, which provides, in relevant part:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. 101.

Section 101 defines in "expansive terms" the categories of patent-eligible inventions. *Diamond* v. *Chakrabarty*, 447 U.S. 303, 308 (1980). Thomas Jefferson, an author of the Act of Feb. 21, 1793 (1793 Patent Act), ch. 11, 1 Stat. 318, desired that "ingenuity should receive a liberal encouragement," and broad and flexible patent laws are integral to that goal. See *Chakrabarty*, 447 U.S. at 308-309 (quoting 5 *Writings of Thomas Jefferson* 75-76 (Washington ed. 1871)). Consistent with that intent, "[t]he subject-matter provisions of the patent law have been cast in broad terms to fulfill the constitutional and statutory goal of promoting 'the Progress of Science and the useful Arts' with all that means for the social and economic benefits envisioned by Jefferson." *Id.* at 315; see *J.E.M. Ag Supply, Inc.* v. *Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124, 130 (2001) ("In choosing such expansive terms as 'manufacture' and 'composition of matter,' modified by the comprehensive 'any,' Congress plainly contemplated that the patent laws would be given wide scope.") (quoting *Chakrabarty*, 447 U.S. at 308).

"Broad," however, does not mean unbounded. Although the prospect of patent protection may create incentives for research and innovation that would not otherwise occur, the restrictions imposed by the patent laws entail social costs as well. For instance, patent protection may have the effect of excluding would-be competitors who could produce a patented invention more efficiently, thereby inhibiting post-invention competition and innovation. The Patent Act therefore "reflects a balance between the need to encourage innovation and the avoidance of monopolies which stifle competition without any concomitant advance in the 'Progress of Science and useful Arts.'" *Bonito Boats, Inc.* v. *Thunder Craft Boats, Inc.*, 489 U.S. 141, 146 (1989).

Section 101 reflects Congress's determination that, for specified categories of subject matter (processes, machines, manufactures, and compositions of matter), the goal of fostering innovation may justify the restrictions on post-invention competition that the patent laws impose. Section 101 also makes clear, however, that inventions falling outside those broad but bounded categories are ineligible for patent protection even if they satisfy the Patent Act's other requirements. "[N]o patent is available for a discovery, however useful, novel, and nonobvious, unless it falls within one of the express categories of patentable subject matter of 35 U.S.C.

§ 101." *Kewanee Oil Co.* v. *Bicron Corp.*, 416 U.S. 470, 483 (1974). By "bring[ing] certain types of invention and discovery within the scope of patentability while excluding others," the Patent Act of 1952 "seeks to avoid the dangers of overprotection just as surely as it seeks to avoid the diminished incentive to invent that underprotection can threaten." *Laboratory Corp. of Am. Holdings* v. *Metabolite Labs., Inc.*, 548 U.S. 124, 127 (2006) (*LabCorp*) (Breyer, J., dissenting from dismissal of a writ of certiorari). In this important respect, the federal patent laws "determine not only what is protected, but also what is free for all to use." *Bonito Boats*, 489 U.S. at 151.

2. In applying Section 101 and its predecessors to specific inventions, the Court has provided a concrete definition for each of the four statutory categories. See, *e.g.*, *Diamond* v. *Diehr*, 450 U.S. 175, 184 (1981) ("Transformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines.") (quoting *Gottschalk* v. *Benson*, 409 U.S. 63, 70 (1972), and *Cochrane* v. *Deener*, 94 U.S. 780, 787-788 (1877)); *Corning* v. *Burden*, 56 U.S. (15 How.) 252, 267 (1854) ("The term machine includes every mechanical device or combination of mechanical powers and devices to perform some function and produce a certain effect or result."); *American Fruit Growers, Inc.* v. *Brogdex Co.*, 283 U.S. 1, 11 (1931) ("manufacture" means "anything made for use from raw or prepared materials," including by "giving to these materials new forms, qualities, properties, or combinations, whether by hand-labor or by machinery"); *Chakrabarty*, 447 U.S. at 308 ("composition of matter" means "all compositions of two or more substances and . . . all composite articles, whether they be

the results of chemical union, or of mechanical mixture, or whether they be gases, fluids, powders or solids") (quoting *Shell Dev. Co.* v. *Watson*, 149 F. Supp. 279, 280 (D.D.C. 1957), aff'd, 252 F.2d 861 (D.C. Cir. 1958) (citing 1 Anthony William Deller, *Walker on Patents* § 14, at 55 (1937))).

For more than a century, the Court has used essentially the same formulation to define a patent-eligible "process." In *Diehr*, the Court "determine[d] [the] meaning" of the term "process" in Section 101, 450 U.S. at 182, by canvassing the Court's historical understanding of that term and its statutory precursor, "art." The Court observed that, "[a]lthough the term 'process' was not added to 35 U.S.C. § 101 until 1952, a process has historically enjoyed patent protection because it was considered a form of 'art' as that term was used in the 1793 Act." *Ibid.*[1] For that reason, the Court explained, "[a]nalysis of the eligibility of a claim of patent protection for a 'process' did not change with the addition of that term to § 101." *Id.* at 184. The Court summed up its longstanding construction as follows: "Transformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines." *Ibid.* (citations omitted); see, *e.g.*, *Parker* v. *Flook*, 437 U.S. 584, 588 n.9 (1978); *Cochrane*, 94 U.S. at 788; pp. 29-33, *infra*.[2] Such "[i]ndustrial processes," the Court concluded, "are the types which have historically been eligible to receive the protection of our patent laws." *Diehr*, 450 U.S. at 184.

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[1] Congress first added the phrase "new and useful process" to Section 101 in the 1952 recodification of the patent laws, substituting it for "new and useful art." The term "art" had appeared in the Act of April 10, 1790 (1790 Patent Act), ch. 7, 1 Stat. 110; in the 1793 Patent Act, which encompassed "any new and useful art, machine, manufacture or composition of matter, or any new and useful improvement [thereof]," 1793 Patent Act § 1, 1 Stat. 319; and in every subsequent patent statute until 1952. As used in those statutes, "art" was construed to be "practically synonymous with process or method." S. Rep. No. 1979, 82d Cong., 2d Sess. 5 (1952); see, *e.g.*, *The Telephone Cases*, 126 U.S. 1, 533 (1888); *Corning*, 56 U.S. (15 How.) at 267; cf. 35 U.S.C. 100(b) ("process" means "process, art or method").

B. The Term "Process" In Section 101 Encompasses Technological And Industrial Processes But Excludes Methods Of Organizing Human Activity

Petitioners contend that the term "process" in Section 101 sweeps beyond innovations satisfying the machine-or-transformation test and encompasses any series of steps that culminates in a useful result, so long as it is not in essence a fundamental principle or abstract idea. Pet. Br. 43-44. That open-ended definition would extend patent protection to methods, such as petitioners' claimed process for hedging consumption risk in commodity markets, that involve the organization of human activity alone and do not include any technological or industrial component. Petitioners' near-boundless conception of "process" cannot be reconciled with the meaning that the term takes from its history and statutory context.

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[2] As the *Diehr* Court noted, 450 U.S. at 181 n.6, Section 100(b), also added in 1952, provides a definition of "process": "The term 'process' means process, art, or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material." 35 U.S.C. 100(b); see Pet. App. 7a n.3.

1. The historical meaning of the terms "process" and useful "art" demonstrates that only technological and industrial processes are patent-eligible

a. The term "process" and its statutory precursor, "art," have historically been understood as limited to technological and industrial methods. The 1790 Patent Act was entitled "An Act to Promote the Progress of Useful Arts," as was the 1793 Patent Act and subsequent statutes. See Robert I. Coulter, *The Field of the Statutory Useful Arts: Part II*, 34 J. Pat. Off. Soc'y 487, 490 (1952) (Coulter); see also Act of July 4, 1836, ch. 357, 5 Stat. 117. In eighteenth century usage, "useful arts" referred to the activities of skilled artisans and workers, especially in the fields of manufacturing and engineering, and stood in juxtaposition to the "liberal" and "fine" arts. See Coulter 493-500; *id.* at 498 (the "fundamental attribute of the useful arts" was that they involved "controlling the forces and materials of nature and putting them to work in a practical way for utilitarian ends serving mankind's physical welfare").

Noah Webster's first American dictionary, for example, defined "art" as "[t]he disposition or modification of things by human skill, to answer the purpose intended," such as "the *art* of building or engraving." 1 Noah Webster, *An American Dictionary of the English Language* (1828) (Webster). Webster appended the following comment: "Arts are divided into *useful* or *mechanic*, and *liberal* or *polite*. The mechanic arts are those in which the hands and body are more concerned than the mind; as in making clothes, and utensils. These arts are called *trades*. The liberal or polite arts are those in which the mind or imagination is chiefly concerned; as poetry, music and painting." *Ibid.* Consistent with Webster's definition, numerous writings at the time used the phrase "useful arts" to refer to manufacturing processes and other applied trades.[3]

The drafters of the early patent statutes and other influential figures in early patent law sometimes contrasted the useful arts with the field of general knowledge and learning, which at the time was known as "science."[4] See, *e.g.*, Arthur H. Seidel, *The Constitution and a Standard of Patentability*, 48 J. Pat. Off. Soc'y 5, 11-12 & n.14 (1966) (Seidel) (citing contemporaneous editions of Samuel Johnson's *A Dictionary of the English Language*); *Johnson's Dictionary of the English Language, in Miniature* 192 (Joseph Hamilton ed., C. Whittingham 1818). Tench Coxe, an early proponent of manufacturing, described as separate fields the "useful arts and manufactures" and the "sciences and the fine arts." See *A Statement of the Arts and Manufactures of the United States of America for the Year 1810*, at xlix

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[3] See, *e.g.*, Daniel Defoe, *A General History of Discoveries and Improvements in Useful Arts* (1727) (providing history of technological developments); Tench Coxe, *An Address to an Assembly of the Friends of American Manufactures* 17 (1787) (describing manufactured goods and processes as "useful arts"); *id.* at 18 (describing progress in the "useful arts" as having produced improvements in various manufactures, from ships to whips to watches); George Logan, *A Letter to the Citizens of Pennsylvania, on the Necessity of Promoting Agriculture, Manufactures, and the Useful Arts* 12-13 (1800) (referring to manufacturing processes as "useful arts," and emphasizing the relationship of a country's prosperity to its progress in the useful arts); W. Kenrick, *An Address to the Artists and Manufacturers of Great Britain* 21-38 (1774) (contrasting the "useful arts" with the "polite arts").

[4] The useful "arts" are the domain of patent law, while the promotion of "science"—general knowledge and learning—is the constitutional object of copyright law. See *Eldred* v. *Ashcroft*, 537 U.S. 186, 192-193 (2003); H.R. Rep. No. 1923, 82d Cong., 2d Sess. 4 (1952); Karl B. Lutz, *Patents and Science: A Clarification of the Patent Clause of the U.S. Constitution*, 18 Geo. Wash. L. Rev. 50, 51 (1949) (Lutz).

(1814) (Coxe); see also Webster, "art." Similarly, Thomas Jefferson described two "inventions" patented in England—an iron bridge and steam power—as falling within the field of "arts," while describing "science" as encompassing more general fields of knowledge. 14 *The Papers of Thomas Jefferson* 697-699 (Julian P. Boyd ed., Princeton University Press 1958) (letter to Joseph Willard, Mar. 24, 1789).

Notably, the fields of pure finance and business, unconnected to technology or industry, were viewed as falling within the "sciences," but not within the "useful arts." In a discussion of progress in industrial fields as well as the surrounding political and economic system, Tench Coxe described "the mechanical and chemical branches" as separate from "the system of labor and political economy." Coxe at 1. He also noted that foreign investors were now comfortable investing in the "manufactures and the useful arts," just as they had long invested in the realms of "commerce, navigation, stocks, banks and insurance companies." *Ibid.* Similarly, Alexander Hamilton distinguished in *The Federalist* No. 8 between "the arts of industry, and the science of finance." *The Federalist* No. 8, at 69 (Alexander Hamilton) (Clinton Rossiter ed., 1961).

In sum, because the initial patent statutes were intended to foster the "useful arts," they were directed to technological and industrial inventions, as opposed to fields of purely human activity—including financial and economic activity unconnected to technology—which fell within the sciences or liberal arts. See Lutz 54 ("The term 'useful arts,' as used in the Constitution and in the titles of the patent statutes is best represented in modern language by the word 'technology.'"); see also Coulter 499 ("'useful arts' must be understood to include not only [contemporaneous] industrial and manufacturing arts," but also innovations in other evolving "technological fields"); *Paulik* v. *Rizkalla*, 760 F.2d 1270, 1276 (Fed. Cir. 1985) (en banc) ("The exclusive right, constitutionally derived, was for the national purpose of advancing the useful arts—the process today called technological innovation."); Pet. App. 193a-194a (noting petitioners' concession before the Board that "technological arts" and "useful arts" are synonymous). The term "art," as the statutory precursor to the "process" category of patent-eligible inventions, should be understood in that light.

b. The historical development of American patent law confirms that the patent system, in extending protection to the useful arts, was not understood to encompass non-technological methods directed to organizing human activity. See generally Pet. App. 38a-59a (Dyk, J., concurring); *id.* at 106a-110a (Mayer, J., dissenting).

Early American patent laws, including the 1790 and 1793 Patent Acts, were enacted against the backdrop of the English patent system and borrowed extensively from its principles and practice. See *Pennock* v. *Dialogue*, 27 U.S. (2 Pet.) 1, 18 (1829) (Story, J.); *Graham* v. *John Deere Co.*, 383 U.S. 1, 5 (1966); see also Pet. App. 41a-42a (Dyk, J., concurring). The pertinent terms of the English Statute of Monopolies authorized patents only for the "working or making of any manner of new manufactures within this realm." *Id.* at 45a (Dyk, J., concurring) (quoting statute). That provision left no room in English practice for patents on methods of organizing human activity. *Id.* at 46a (Dyk, J., concurring).

To the extent that process patents were granted in England in the late eighteenth century—the permissibility of process patents under the Statute of Monopolies was an unsettled question, see Pet. App. 45a-50a (Dyk, J., concurring)—they overwhelmingly involved manufacturing processes. For example, James Watt received a patent in 1769 for a method of reducing the amount of steam required to operate a steam engine. See generally *Boulton* v. *Bull*, 126 Eng. Rep. 651 (C.P. 1795). An index of contemporaneous English patents later published by Bennet Woodcroft, a prominent figure in English patent law, included a wide variety of manufacturing methods but essentially no examples of patents on business strategies or other human activities.[5] See generally Bennet Woodcroft, *Alphabetical Index of Patentees of Inventions, from March 2, 1617 (14 James I) to October 1, 1852 (16 Victoriae)* (2d ed. 1857) (Woodcroft); Pet. App. 46a-47a (Dyk, J., concurring) (citing Woodcroft); see also Malla Pollack, *The Multiple Unconstitutionality of Business Method Patents: Common Sense, Congressional Consideration, and Constitutional History*, 28 Rutgers Computer & Tech. L.J. 61, 95-96 (2002) (Pollack).

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[5] Patents may occasionally have been granted on non-technological processes. For example, a few patents were granted for lotteries, but it is unclear whether these patents simply authorized the conduct of the lotteries. See Pollack 94-95 & n.126. The primary known example of a process patent directed to a human activity appears to have been a patent granted in England in 1778 to John Knox for a "[p]lan for assurances on lives of persons from 10 to 80 years of age." Woodcroft 324; see Pollack 95; Pet. App. 53a (Dyk, J., concurring). As the concurring judges below noted, however, "[t]here is no indication that Knox's patent was ever enforced or its validity tested, or that this example led to other patents or efforts to patent similar activities." *Id.* at 54a (Dyk, J., concurring). The existence of so few patents of this kind in the annals of English patent law strongly suggests that such matters were considered unpatentable.

The English antecedents of early American patent law thus did not suggest that methods of organizing human activity were eligible for patent protection. See Pet. App. 45a-50a (Dyk, J., concurring). Nor is there any evidence that the drafters of the 1790 Act, in using the phrase "useful arts," intended to depart from English practice by extending patent protection to monopolies for such methods, unconnected to any machine or manufacturing process. To be sure, as petitioners emphasize (Br. 47-49), the Framers of the Constitution gave American patent law a broader scope than English law by adopting the term "useful arts" rather than "manufacture," the limitation used in the English Statute of Monopolies. But this formulation was likely designed principally to eliminate doubt as to the patentability of technological and industrial processes—a question that was unsettled in English law in 1789. See Pet. App. 45a-46a (Dyk, J., concurring).

Indeed, the opposition of the drafters of early American patent statutes to English business monopolies would have made them reluctant to extend patents to methods of organizing human economic and social activity, unconnected to any technology. The federal patent laws were "written against the backdrop of the practices—eventually curtailed by the Statute of Monopolies—of the Crown in granting monopolies to court favorites in goods or businesses." *Graham*, 383 U.S. at 5. These monopolies vested grantees with the sole right to supervise or engage in a trade. See Edward C. Walterscheid, *The Early Evolution of the United States Patent Law: Antecedents (Part 2)*, 76 J. Pat. & Trademark Off. Soc'y 849, 863-864 (1994). Like many of the Framers of the Constitution, Thomas Jefferson was deeply opposed to government-granted trade monopolies—so much so that he only slowly came to support the idea of limited protection for the creators of inventions. *Bonito Boats*, 489 U.S. at 147; see P.J. Federico, *Operation of the Patent Act of 1790*, 18 J. Pat. Off. Soc'y 237, 239-242 (1936). It is difficult to imagine that Jefferson, who once expressed disappointment at the lack of a constitutional prohibition on monopolies, see *id.* at 240, would have understood the 1793 Patent Act (which he helped to draft) to authorize patents for non-industrial, non-technological processes, including business strategies and financial schemes as such. Patents on these items would simply have seemed too close to granting monopolies over the practice of business itself.[6] See *In re Yuan*, 188 F.2d 377, 380 (C.C.P.A. 1951) (the Framers "were familiar with the long struggle over monopolies so prominent in English history, where exclusive rights to engage even in ordinary business activities were granted so frequently by the Crown").

The historical record of eighteenth-century American patent practice reveals no pattern of granting patents for methods of organizing human activity, divorced from any kind of technology. No human-activity patents were granted by the first Congress itself or approved by the "Patent Board" under the Patent Act of 1790, of which Jefferson was a member and the de facto administrator.[7] See Pet. App. 54a-55a (Dyk, J., concurring); Edward C. Walterscheid, *To Promote the Progress of Useful Arts: American Patent Law and Administration, 1798-1836*, at 173-178 (1998) (*Progress of Useful Arts (1998)*); Pollack 107-108. Between 1793 and 1836, patents were granted based on registration rather than examination, and thus are not reflective of any systematic interpretation of patent-eligible subject matter, see *Progress of Useful Arts (1998)*, at 195, 243; but after 1836, examples of human-activity patents are similarly rare.[8] See Pet. App. 54a-55a & n.18 (Dyk, J., concurring).

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[6] Similarly, had the Framers understood patent protection to contemplate broad monopolies on methods directed to business-related techniques and other human activities, untethered to any technological or industrial innovation, the inclusion of the Patent Clause in the Constitution likely would have been hotly debated. But the Clause was adopted without debate or dissent. See Edward C. Walterscheid, *To Promote the Progress of Science and Useful Arts: The Background and Origin of the Intellectual Property Clause of the United States Constitution*, 2 J. Intell. Prop. L. 1, 26 & n.88 (1994) (citing 2 *The Records of the Federal Convention of 1787* at 509-510 (Max Farrand ed., 1966)). Given the Framers' suspicion of government-sanctioned business monopolies, that silence is telling. See *id.* at 37-38; Pollack 111-112.

Thus, patents directed to the organization of human activities, including novel business and financial techniques, were rarely if ever issued during the eighteenth and nineteenth centuries. That absence is especially telling because entrepreneurial enterprises, and with them myriad financial innovations, flourished in the early republic and thereafter. See Pollack 105-106; Pet. App. 53a-54a (Dyk, J., concurring). Among these were new methods of risk management, and in particular, new methods for providing insurance against various risks. See Eric Wertheimer, *Underwriting: The Poetics of Insurance in America, 1722-1872*, at 3-6 (Stanford University Press 2006). In view of the explosion of commerce in the late eighteenth century and the continuing evolution and creation of financial and risk-management methods over the next century, the lack of any corresponding wave of patents on methods of commerce, insurance, and other human activities suggests that subjects not related to any technological or industrial process were simply not considered the province of patent law.

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[7] Although petitioners rely (Br. 50-51) on a 1789 application for "spheres, hemispheres, maps, charts, and tables, on * * * principles of magnetism," in which the inventor asserted that he had discovered methods of using magnetism to determine longitude, that application sought the exclusive right to sell *products* made using those methods. See P.J. Federico, *The First Patent Act*, 14 J. Pat. Off. Soc'y 237, 239-240 (1932); *Progress of Useful Arts (1998)*, at 82.

[8] In the court of appeals, petitioners and their amici relied on an 1840 patent involving lottery schemes. As Judge Dyk noted in his concurring opinion, however, that patent involved a method for manufacturing lottery tickets, and similar examples—including an "insurance policy" written on two cards— also involved either manufacturing processes or articles. See Pet. App. 54a-55a & n.18 (Dyk, J., concurring). Although occasional patents may have been granted for claimed inventions directed to non-technological financial methods, cf. Double Rock Amicus Br. 30-32, there is no indication that such patents were the norm, or that they were ever tested through litigation or licensing.

c. In accordance with the established understanding of the term "useful art" as limited to technological processes, courts prior to 1952 rejected efforts to obtain or enforce patents on an "art" of organizing human activity or business, when that art was unconnected to any specific apparatus or industrial process. See, *e.g.*, *Hotel Sec. Checking Co.* v. *Lorraine Co.*, 160 F. 467, 469 (2d Cir. 1908) ("A system of transacting business disconnected from the means for carrying out the system is not, within the most liberal interpretation of the term, an art."); see also, *e.g.*, *In re Patton*, 127 F.2d 324, 327-328 (C.C.P.A. 1942); see Pet. App. 108a-109a (Mayer, J., dissenting).

This Court repeatedly expressed a similar understanding. In 1876, the Court defined "an art" "[i]n the language of the patent law" as "an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing." *Cochrane*, 94 U.S. at 788. The Court subsequently clarified that the operation of particular machines and the generation of useful mechanical results were also patent-eligible processes, quoting a treatise for the proposition that "an art cannot be practised except by means of physical agents, through which the force is brought in contact with or directed toward its object." See *Expanded Metal Co.* v. *Bradford*, 214 U.S. 366, 383, 385-386 (1909) (quoting 1 William C. Robinson, *The Law of Patents for Useful Inventions* § 167, at 250 (1890)); *The Telephone Cases*, 126 U.S. at 533-537 (1888). The Court's early interpretation of the phrase "new and useful art" in the patent statute thus reflected its understanding that "art" had a practical, technological scope.

d. Against the backdrop of this settled understanding, Congress recodified the patent laws in 1952, substituting the word "process" for "art" in Section 101. Because "[a]nalysis of the eligibility of a claim of patent protection for a 'process' did not change with the addition of that term to § 101," *Diehr*, 450 U.S. at 184, Section 101 in its current form should be read to incorporate the established understanding, reflected in historical practices and in this Court's decisions, that processes lacking any industrial or technological application are ineligible for patent protection. See *id.* at 182-184; see also, *e.g.*, *Pfaff* v. *Wells Elecs., Inc.*, 525 U.S. 55, 63 (1998) (patent system is designed to encourage "the creation and the public disclosure of new and useful advances in technology").

2. *The statutory context confirms that only technological and industrial methods are patent-eligible "processes"*

The other categories of patent-eligible subject matter listed in Section 101 confirm that the term "process" does not encompass non-technological methods of organizing human activity. Under the "commonsense" canon of *noscitur a sociis*, "a word is given more precise content by the neighboring words with which it is associated." *United States* v. *Williams*, 128 S. Ct. 1830, 1839 (2008) (citing *Jarecki* v. *G.D. Searle & Co.*, 367 U.S. 303, 307 (1961)). This interpretive tool, the Court has observed, "is often wisely applied where a word is capable of many meanings in order to avoid the giving of unintended breadth to the Acts of Congress." *Jarecki*, 367 U.S. at 307.

The other three statutory categories of patent-eligible subject matter identified in Section 101—"machine, manufacture, or composition of matter"—all "are things made by man[,] and involve technology." Pet. App. 194a.[9] The focus of Section 101 as a whole thus reinforces the understanding that the term "process" is limited to technological and industrial methods and excludes fundamentally dissimilar methods directed to such human activities as sports moves, marketing techniques, and estate planning strategies.[10] Petitioners' construction of "process" as any series of steps culminating in a useful result thus would unmoor the term from the other categories listed in Section 101.

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[9] See *Corning*, 56 U.S. (15 How.) at 267 (a machine is a "mechanical device * * * to perform some function and produce a certain effect or result"); *American Fruit Growers*, 283 U.S. at 11 ("manufacture" means "anything made for use from raw or prepared materials"); *Chakrabarty*, 447 U.S. at 308 ("composition of matter" means "all compositions of two or more substances and . . . all composite articles" that can result from, among other things, "chemical union" or "mechanical mixture" (quoting *Shell Dev. Co.*, 149 F. Supp. at 280)).

Had Congress intended patent-eligibility to be so open-ended, it could have provided simply: "Whoever makes any new and useful invention or discovery, or any improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." Congress chose instead to identify discrete categories of patent-eligible subject matter that, while broad, share a technological focus. As Judge Giles Rich, one of the principal authors of the 1952 Patent Act, observed:

> Invaluable though it may be to individuals, the public, and national defense, the invention of a more effective organization of the materials in, and the techniques of teaching a course in physics, chemistry, or Russian is not a patentable invention because it is outside of the enumerated categories of "process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." Also outside that group is one of the greatest inventions of our times, the diaper service.

Giles S. Rich, *Principles of Patentability*, 28 Geo. Wash. L. Rev. 393, 393-394 (1960).

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[10] This textual inference is underscored by the definition of "process" in the Patent Act, which states that "process" "includes a new use of a known process, machine, manufacture, composition of matter, or material." 35 U.S.C. 100(b). This definition suggests the kinds of processes that Congress expected would be eligible for patent protection and implies that Congress did not intend the same definition to embrace fundamentally dissimilar subject matter.

b. In arguing that the term "process" extends beyond industrial and technological methods, petitioners and numerous amici contend that Congress intended the 1952 Patent Act to encompass "anything under the sun that is made by man." Pet. Br. 19, 27 (quoting *Chakrabarty*, 447 U.S. at 309, and S. Rep. No. 1979, 82d Cong., 2d Sess. 5 (1952); H.R. Rep. No. 1923, 82d Cong., 2d Sess. 6 (1952)). But as several members of the court below observed (Pet. App. 58a (Dyk, J., concurring); *id.* at 110a-111a (Mayer, J., dissenting); *id.* at 156a-157a & n.5 (Board)), the cited legislative history, when read in context, cannot bear the weight that petitioners place on it. The House and Senate committee reports state:

> A person may have "invented" a machine or a manufacture, which may include anything under the sun that is made by man, but it is not necessarily patentable under [S]ection 101 unless the conditions of the title are fulfilled.

S. Rep. No. 1979, *supra*, at 5; H.R. Rep. No. 1923, *supra*, at 6. But as the context makes clear, the phrase "anything under the sun" in these reports refers not to patentable processes but rather to "machines" and "manufactures." The reports provide no support for petitioners' contention that the term "process" encompasses every useful series of steps "conceived by man." Pet. App. 157a; *id.* at 58a (Dyk, J., concurring) ("[The statement] refers to things 'made by man,' not to methods of organizing human activity."). Indeed, the Court in *Diehr* acknowledged the reports' reference to "anything under the sun that is made by man," 450 U.S. at 182, just before concluding that "[i]ndustrial processes such as" the rubber-curing method at issue in that case "are the types which have historically been eligible" for patent protection, *id.* at 184.

C. A Patent-eligible "Process" Under Section 101 Is One That Concerns The Operation Of A Particular Machine Or Apparatus Or Effects A Transformation Of Matter Into A Different State Or Thing

Construed in accordance with its history and context, the term "process" in Section 101 encompasses industrial and technological methods, broadly conceived, but does not extend to methods of organizing human activity. In identifying processes that "involve technology" in the relevant sense, this Court has focused on whether a patent applicant's claimed method either (1) concerns the operation of a particular machine or apparatus or (2) has the effect of transforming matter. Pet. App. 194a; see, *e.g.*, *Diehr*, 450 U.S. at 184; pp. 13-15, *supra*. That definition of "process" provides an effective means of differentiating between the industrial and technological methods that have historically been eligible for patent protection, and human-activity methods that have not traditionally been viewed as patent-eligible. The machine-or-transformation definition, in other words, provides a framework for analyzing patent claims in every extant field of technology and industry.

1. This Court has consistently used the machine-or-transformation test to identify patent-eligible processes

More than a century ago, this Court recognized in *Cochrane* that processes eligible for patent protection involve the manipulation, treatment, or transformation of matter. *Cochrane* concerned a patent for an improved method of manufacturing superfine flour. In rejecting the argument that a process patent is limited to the specific instruments employed by the inventor to perform the process, the Court explained that "[a] process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing." 94 U.S. at 788. The Court subsequently made clear that, under *Cochrane* and later cases, a process is also patent-eligible if it "involv[es] mechanical operations," including the operation of a machine to achieve a useful result. See *Expanded Metal*, 214 U.S. at 383-386; *The Telephone Cases*, 126 U.S. at 533-537.

In later decisions, the Court treated the definition of a "patentable process" explicated in *Cochrane* and related cases as definitive. See, *e.g.*, *Holland Furniture Co.* v. *Perkins Glue Co.*, 277 U.S. 245, 255 (1928) ("A patentable process is a method of treatment of certain materials to produce a particular result or product."); *Waxham* v. *Smith*, 294 U.S. 20, 22 (1935) ("By the use of materials in a particular manner he secured the performance of the function by a means which had never occurred in nature, and had not been anticipated by the prior art; this is a patentable method or process."); *Expanded Metal Co.*, 214 U.S. at 383-384; *Risdon Iron & Locomotive Works* v. *Medart*, 158 U.S. 68, 75-76 (1895). The courts of appeals likewise understood *Cochrane* and its progeny to define the circumstances in which processes were eligible for patent protection. Pet. App. 57a; see, *e.g.*, *In re Yuan*, 188 F.2d at 381-382; *Cowles Co.* v. *Frost-White Paper Mills*, 174 F.2d 868, 870 & n.6 (2d Cir. 1949) (L. Hand, J.); *P.E. Sharpless Co.* v. *Crawford Farms, Inc.*, 287 F. 655, 658-659 (2d Cir. 1923); *Miller* v. *Electro Bleaching Gas Co.*, 276 F. 379, 381 (8th Cir. 1921), cert. denied, 257 U.S. 660 (1922); *Chicago*

Sugar-Refining Co. v. *Charles Pope Glucose Co.*, 84 F. 977, 982 (7th Cir. 1898).[11]

The Court's more recent decisions under the 1952 Patent Act uniformly follow, and build on, the definition of patent-eligible processes developed in *Cochrane* and its progeny. In *Benson*, which held unpatentable a method of converting binary-coded decimal numerals into pure binary numerals, the Court quoted at length from *Cochrane* and concluded that "[t]ransformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines." *Benson*, 409 U.S. at 70 (citation omitted). "So it is," the Court continued, that a process for manufacturing fatty acids and glycerine using high temperature water and pressure was held patent-eligible in *Tilghman* v. *Proctor*, 102 U.S. 707 (1881). *Benson*, 409 U.S. at 70 (citing *Tilghman*, 102 U.S. at 721). Similarly, in *Flook*, the Court recognized that "[a]n argument can be made * * * that this Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a 'different state or thing.'" See *Flook*, 437 U.S. at 588 n.9 (citing *Cochrane*, 94 U.S. at 788).

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[11] Although petitioners do not acknowledge the Court's definition of "process" in *Cochrane*, cf. Br. 23, Judge Newman urged in dissent below that *Cochrane* did not purport to set out the Court's first statement of the definition of a patent-eligible process, but intended only to illustrate the difference between process and machine patents. Pet. App. 76a-78a (Newman, J., dissenting). Amici likewise would distinguish *Cochrane* and related cases as outdated and illustrative only. *E.g.*, 20 Law and Business Professors Amicus Br. 6. These objections are refuted by the Court's treatment of *Cochrane* in subsequent cases as establishing a controlling definition of "process," and the courts of appeals' adherence to it.

To be sure, in both *Benson* and *Flook*, the Court declined to decide the precise outer boundaries of the universe of patent-eligible processes. Rather, the Court "assume[d] that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents." *Flook*, 437 U.S. at 588 n.9; see *Benson*, 409 U.S. at 71. The Court found it unnecessary to decide whether a patent could ever be issued for a process that did not involve the operation of a machine or transformation of matter because it rejected the claims on other grounds—namely, that the claimed inventions fell within the exclusion for abstract ideas and mathematical formulae. See *Flook*, 437 U.S. at 594-595; *Benson*, 409 U.S. at 67 ("abstract intellectual concepts are not patentable," because they "are the basic tools of scientific and technological work"). The Court did not cast doubt on the status of the machine-or-transformation test as the generally applicable standard, much less retreat from its longstanding emphasis on the technological or industrial nature of patent-eligible processes.

In its most recent decision construing the term "process" in Section 101, the Court reiterated (this time without qualification) its previous statement that, under *Cochrane* and later cases, "[t]ransformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines." *Diehr*, 450 U.S. at 184 (quoting *Benson*, 409 U.S. at 70). Describing *Cochrane* as "defining the nature of a patentable process," *id.* at 182, the Court also quoted at length from decisions describing as patent-eligible "manufacturing process[es]," *id.* at 184 n.8 (quoting *Tilghman*, 102 U.S. at 722), and other technological inventions, *id.* at 182-183 & n.7 (quoting *Corning*, 56 U.S. (15 How.) at 267-268). The Court then concluded that the rubber-curing process at issue was patent-eligible because it "involve[d] the transformation of an article, in this case raw, uncured synthetic rubber, into a different state or thing."[12] *Id.* at 184. "Industrial processes such as this," the Court noted, "are the types which have historically been eligible to receive the protection of our patent laws." *Ibid.* Thus, the Court's most recent exposition of the definition of "process" reaffirmed its longstanding reliance on the principle that a patent-eligible process should concern a machine or effect a transformation of matter.

2. A process is patent-eligible if it concerns the operation of a machine or effects a transformation of matter into a different state or thing

Taken together, this Court's decisions from *Cochrane* through *Diehr* establish a controlling definition of the term "process" in Section 101 that is appropriately broad but bounded and comports with the historical understanding of the scope of the patent laws. A process may be eligible for patent protection if, taken as a whole, it concerns the operation of a particular machine or apparatus or effects a transformation of matter into a different state or thing. *Diehr*, 450 U.S. at 184; *Cochrane*, 94 U.S. at 788; see Pet. App. 12a-13a. By excluding methods that are not directed to technological or industrial advances, that test ensures that a claimed process is the "kind of 'discover[y]' that the statute was enacted to protect." *Flook*, 437 U.S. at 593. As the Board observed in this case, a method that falls within this definition "involve[s] technology" and therefore is "a 'process' under § 101." Pet. App. 194a.

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[12] Petitioners attempt to downplay *Diehr*'s significance by pointing (Br. 21) to the Court's parenthetical use of the signal "*e.g.*" in the statement that "when a claim containing a mathematical formula * * * is performing a function which the patent laws were designed to protect (*e.g.*, transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101." 450 U.S. at 192. The signal "*e.g.*" simply reflects the Court's omission from the parenthetical of the other class of process claims: those that concern the operation of a particular machine or apparatus. See *Expanded Metal Co.*, 214 U.S. at 383-386.

The eligibility of a process for patent protection under Section 101 should be judged by a two-part inquiry. The first question is whether the claimed process, taken as a whole, concerns the operation of a particular machine or apparatus or effects a transformation of matter into a different state or thing. In considering this question, the caveat that a process claim must be considered "as a whole," *Diehr*, 450 U.S. at 192, warrants particular emphasis. For instance, a step that involves a machine will not suffice to bring an otherwise ineligible process within the ambit of Section 101 if that step is merely insignificant extra-solution activity—*i.e.*, activity that is not central to the purpose of the method, such as the step of downloading search results on a computer in the context of a method for evaluating and ranking search results. See *id.* at 191-192; *Flook*, 437 U.S. at 590. Likewise insufficient to bring a method within the ambit of the machine-or-transformation definition are mere field-of-use restrictions—for example, limiting a generic method of marketing to the field of marketing computers or software. *Diehr*, 450 U.S. at 191; *Flook*, 437 U.S. at 590.

Second, because laws of thermodynamics, mathematical formulas, abstract ideas, and other phenomena of nature are "part of the storehouse of knowledge of all men * * * free to all men and reserved exclusively to none," *Funk Bros. Seed Co.* v. *Kalo Inoculant Co.*, 333

U.S. 127, 130 (1948), every claimed process must be further examined to ensure that granting the patent would not in practical effect "wholly pre-empt" the public's access to the "basic tools of scientific and technological work." *Benson*, 409 U.S. at 72, 67. Even a process that otherwise satisfies the criteria for patent-eligibility (*e.g.*, because it concerns the use of a machine) may pose that risk, as the computer-assisted method of calculation in *Benson* demonstrates. See *id.* at 72 (claimed method "in practical effect would be a patent on the algorithm itself"). A second inquiry is therefore required to determine whether the claim preempts all applications of the fundamental principle, rather than simply claiming the use of the fundamental principle "in conjunction with all of the other steps in [the] claimed process." *Diehr*, 450 U.S. at 187.[13]

In *Diehr*, this Court engaged in the two-step analysis described above. It first examined whether the claimed process of curing rubber constituted a "process" under *Cochrane* and related cases, concluding that the "claims involve the transformation of an article * * * into a different state or thing." 450 U.S. at 184. The Court then considered whether the claimed process was nonetheless unpatentable for its use of a mathematical formula. The Court concluded that the exception to patentability did not apply because, although respondents' "*process* admittedly employ[ed] a well-known mathematical equation," it did "not seek to pre-empt the use of that equation." *Id.* at 187; see *id.* at 185-188.[14]

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[13] With respect to the preemption portion of the analysis, the Court in *Flook* had previously suggested that a claimed method that applied an abstract idea could be patent-eligible only if it contained patent-eligible subject matter *apart from* the abstract principle. 437 U.S. at 593-594 & n.16. In *Diehr*, however, the Court clarified that a process should be considered as a whole. See 450 U.S. at 192.

3. *The machine-or-transformation test accommodates evolving technology*

For more than a century, the machine-or-transformation test for identifying a patent-eligible "process" has provided a broad and technology-neutral framework for analyzing process claims related to constantly evolving technology. Only non-technological processes directed to the organization of human activity are categorically excluded by the machine-or-transformation standard. No extant field of technology or industry—including software and diagnostic methods, the two fields addressed by numerous amici—is wholly excluded from patent protection under that approach; rather, the standard provides a framework for analyzing individual claimed processes to determine whether they involve technological or industrial methods.[15]

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[14] The majority opinion below could be read to collapse the machine-or-transformation inquiry with the preemption analysis, implying that any claimed process that satisfies the machine-or-transformation test necessarily will comport with the settled rule against patenting, for example, mathematical formulas and phenomena of nature; and conversely, that any claimed method that fails the machine-or-transformation test necessarily preempts a fundamental principle. Pet. App. 12a-13a. That approach appears to conflate two distinct inquiries. A method that concerns the operation of a machine—such as the method at issue in *Benson*—can still be subject to a judicial exception. And a method that does not involve a machine or transformation—and would therefore be ineligible under Section 101—may not suffer from the independent problem of preempting a fundamental principle. For example, a multi-step method for proposing marriage might not preempt the abstract concept of proposing marriage; but it is still directed to human activity and therefore is not a "process" under Section 101.

a. Petitioners and amici contend that reaffirming the machine-or-transformation test will impair the "knowledge economy" by foreclosing patent protection for today's "electronic and photonic technologies" and other processes, particularly software, "that handle data and information in novel ways." Pet. Br. 38; see generally Business Software Alliance Amicus Br.; Int'l Business Machines Corp. Amicus Br. That concern is misplaced.

As an initial matter, this case does not present any question as to the application of the machine-or-transformation test to software or yet more novel future forms of industrial or technological processes. As the majority below noted, petitioners do not seek to patent their method of hedging risk in the form of software or any other new information technology. Pet. App. 25a n.23. The only issue presented in this case is whether risk-management techniques, legal methods, and other modes of organizing purely human activity, wholly apart from any form of technology, are "process[es]" within the meaning of Section 101.

In any event, the machine-or-transformation test contemplates that many forms of "software" inventions are patent-eligible. As with many types of technology, the patent-eligibility of software cannot be resolved as a categorical matter. Rather, the eligibility of a claimed software invention depends on the content of that invention and the form in which it is sought to be patented.[16]

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[15] As the court below recognized, if "future developments in technology * * * present difficult challenges to the machine-or-transformation" definition, the inquiry could be modified. Pet. App. 17a. At present, however, no such "departure" is necessary. *Ibid.*

As the Board noted below, the machine-or-transformation definition may readily encompass most software claims because such claims could be said to concern the use of a machine (*i.e.*, the computer itself) or involve a transformation of matter (*i.e.*, the writing and re-writing of data, represented by magnetic changes in the substrate of a hard disk or the altered energy state of transistors in a memory chip). Pet. App. 177a-178a. This conception of the machine-or-transformation test is reflected in non-binding interim examination instructions issued by the PTO in August 2009. See United States PTO, *Interim Examination Instructions for Evaluating Subject Matter Eligibility Under 35 U.S.C. § 101* (Aug. 24, 2009) (*Interim Instructions*).[17] The *Interim Instructions* state that "computer implemented processes" are often disclosed as connected to a machine, *i.e.*, a general purpose computer. *Id.* at 6. Such a computer, "when programmed to perform the process steps" so that it performs the specific function contemplated by the process, "may be sufficiently 'particular'" for purposes of the machine-or-transformation test. *Ibid.*; cf. *In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994) (en banc) ("[A] general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software."). In addition, "transformation of electronic data has been found when the nature of the data has been changed such that it has a different function or is suitable for a different use." *Interim Instructions* 6.[18]

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[16] As this Court recently observed in *Microsoft Corp.* v. *AT&T Corp.*, 550 U.S. 437 (2007), the term "software" refers generally to the "set of instructions, known as code, that directs a computer to perform specified functions or operations." *Id.* at 447 (citation omitted). A claim for a software invention can be drafted in several ways, including as the "process" of accomplishing a particular task through the use of a computer; or, as in *Microsoft*, as a "machine" specially programmed to accomplish the task in question. See *id.* at 446.

[17] The *Interim Instructions*, which "do not constitute substantive rulemaking" (*Interim Instructions* 1), are designed to aid examiners in considering eligibility questions in accordance with the court of appeals' statement of the machine-or-transformation test, pending this Court's decision in this case.

To be sure, questions involving the application of the machine-or-transformation definition to software claims may arise in the future. The patentability of software is subject to established limits. For example, software code that is claimed by itself, uncoupled from any storage medium or computer, may be nothing more than "an idea without physical embodiment," and therefore would not be patent-eligible. See *Microsoft Corp.*, 550 U.S. at 449.[19] But because petitioners' claimed innovation is far removed from the field of software technology, this case would provide an unsuitable vehicle for clarifying the circumstances in which software is and is not patent-eligible. And this Court's reaffirmation of the machine-or-transformation test for identifying patent-eligible "processes," in a case involving only a claim for a non-technological method of hedging financial risk, would not materially affect the circumstances in which patents for software may appropriately be issued.

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[18] A claimant may not bring a process directed to a human activity within the machine-or-transformation definition simply by reciting that the process uses a computer to perform insignificant extra-solution activity (*e.g.*, data storage, or transmission and receipt of data over a network). See *Interim Instructions* 7-8. For instance, a method composed of steps of evaluating pieces of information by sorting the information and ranking each piece of information based on certain criteria does not become a machine-oriented test simply by specifying that the person performing the process shall initially obtain the relevant information by downloading it using a computer. *Ibid.*

[19] In addition, patent claims for software processes that, considered as a whole, would preempt the public's access to basic mathematical principles are not patent-eligible. See *Benson*, 409 U.S. at 71-72. And even if claimed software is patent-eligible under Section 101, it may be unpatentable because it was "obvious" at the time of invention, see 35 U.S.C. 103; *Dann* v. *Johnston*, 425 U.S. 219, 227-228 (1976), or for other reasons, see 35 U.S.C. 102, 112. Those restrictions, however, would apply regardless of how the term "process" in Section 101 is defined.

The same is true of medical diagnostic techniques, whose eligibility for patent protection is also discussed by several amici. See, *e.g.*, Novartis Corp. Amicus Br. Methods of diagnosing a condition by testing, or assaying, for a characteristic that correlates to the condition may be claimed in any number of ways, and therefore patentability cannot be determined as a categorical matter. If the claimed process effects a transformation of matter in a manner that is more than insignificant extra-solution activity, the method may satisfy Section 101. See, *e.g.*, *Prometheus Labs., Inc.* v. *Mayo Collaborative Servs.*, No. 2008-1403, 2009 WL 2950232, at *8-*10 (Fed. Cir. Sept. 16, 2009). For example, the PTO has generally treated a transformation of blood occurring in the assaying step as involving a sufficient transformation for purposes of the machine-or-transformation test.

b. Dicta in the Federal Circuit's decision in *State Street Bank & Trust Co.* v. *Signature Financial Group, Inc.*, 149 F.3d 1368 (1998), cert. denied, 525 U.S. 1093 (1999), could be read to suggest that any series of steps that yields a "useful, concrete, and tangible result" is patent-eligible. See Pet. App. 22a-24a. In the years following that decision, applicants sought to patent non-technological methods for a wide variety of human social activities and endeavors, including not only risk-management and legal methods (sometimes employing software) but also "methods of mediation, dating, [and] physical sports moves." *Id.* at 151a. During that period, the PTO sometimes issued patents for marketing strategies, tax avoidance and estate planning methods, methods of playing poker, and even a method of conducting a mock jury exercise.[20] See also *id.* at 119a (Mayer, J., dissenting) (additional examples).[21]

Because those methods do not concern a particular machine or effect a transformation of matter, they are not patent-eligible "processes" under a proper understanding of Section 101. Petitioners are wrong, however, in suggesting that reaffirmation of the machine-or-transformation test would "disrupt the settled expectations of the inventing community." Pet. Br. 39 (quoting *Festo Corp.* v. *Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 739 (2002)). Although patents inconsistent with the machine-or-transformation test have been issued during the decade since *State Street*, this Court has not cast doubt on the applicability of that test. Nor has this Court ever suggested that claimed methods directed to organizing human activity, untethered to technology, are patent-eligible. See, *e.g.*, *Benson*, 409 U.S. at 68-71 (canvassing history of processes found patent-eligible). Abandonment of that century-old approach would constitute a far more significant deviation from historical practice than would a disavowal of the more extreme applications of the *State Street* decision during the past decade.

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[20] *E.g.*, U.S. Patent No. 6,457,317 ("Method of Selling Merchandise on a Golf Course"); U.S. Patent No. 6,292,788 ("Methods and Investment Instruments for Performing Tax-Deferred Real Estate Exchanges"); U.S. Patent No. 6,567,790 ("Establishing and Managing Grantor Retained Annuity Trusts Funded by Nonqualified Stock Options"); U.S. Patent No. 6,206,374 ("Methods of Playing Poker Games"); U.S. Patent No. 6,070,873 ("Card Game and Method of Playing Card Game"); U.S. Patent No. 6,607,389 ("Systems and Methods for Making Jury Selection Determinations").

[21] The *holding* of *State Street* was simply that no "business methods" exception to patent-eligibility exists—*i.e.*, that if an invention is otherwise encompassed by Section 101 (*e.g.*, as a "machine" or "process"), it is not rendered ineligible for patent protection because its utility lies in the realm of business. During the years after *State Street*, however, the PTO sometimes issued patents that appear to have been premised on a broader view of the decision's import.

Petitioners contend (Br. 38-40) that a decision foreclosing patent protection for processes directed to purely human activity, including business and financial processes, would have adverse economic effects. Such arguments cannot be evaluated, however, without reference to the other legal doctrines that protect non-technological commercial activities. These doctrines—including antitrust, trade secret, trade dress, and trademark law, as well as common-law principles of contract, tort, and unfair competition—were developed specifically to regulate the economic and legal rights of businesses engaged in competition, and they reflect careful consideration of the degree to which business properties should be protected and commercial intercourse should be encouraged.[22] Reaffirming that business-related methods untethered to technology are not "process[es]" under Section 101 would thus leave these patent-ineligible business innovations with substantial protection—as has been true throughout the history of this nation's commercial development.

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[22] Software is additionally protected by copyright law. See International Business Machines Amicus Br. 24 (copyright law provides "important protections" for the expression involved in computer software).

c. Petitioners and amici contend that the Federal Circuit's adoption of the machine-or-transformation definition of "process" reflects that court's alleged tendency to utilize impermissibly rigid approaches in an area of the law that should be characterized by flexibility. Petitioners analogize this case to *KSR International Co.* v. *Teleflex Inc.*, 550 U.S. 398 (2007), *eBay Inc.* v. *MercExchange, L.L.C.*, 547 U.S. 388 (2006), and *Festo Corp.*, *supra*, in which this Court corrected what petitioners regard as similar errors. Pet. Br. 27-28; 20 Law and Business Professors Amicus Br. 15 & n.8. That analogy is flawed. Section 101 is fundamentally unlike the nonobviousness requirement in 35 U.S.C. 103, the grant of equity jurisdiction in 35 U.S.C. 283, or the judicial doctrine of equivalents. In each of the decisions on which petitioners rely, this Court rejected a rigid general rule adopted by the Federal Circuit because in each area this Court's own precedents eschewed rules of broad applicability, insisting on case-specific, factually intensive inquiries. See *eBay*, 547 U.S. at 391-393; *Festo*, 535 U.S. at 737-739; *KSR*, 550 U.S. at 415-418.

Section 101, by contrast, establishes the threshold conditions for eligibility for patent protection. Its four classes of statutory subject matter, though "extremely broad" in scope, *J.E.M. Ag Supply, Inc.*, 534 U.S. at 130, are nonetheless definite and bounded in content. This Court therefore has not hesitated to adopt concrete definitions of the relevant statutory terms.[23] See *Corning*,

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[23] For this reason, petitioners' assertion (Br. 20, 22-23) that courts lack the authority to impose limits on patent-eligible subject matter that have not been expressed by Congress misses the mark. Congress restricted the scope of the Patent Act by limiting patent-eligibility to four defined categories of inventions. The question presented by this case is whether the term "process" in Section 101 embraces purely

56 U.S. (15 How.) at 267 (machine); *American Fruit Growers*, 283 U.S. at 11 (manufacture); *Chakrabarty*, 447 U.S. at 308 (composition of matter); pp. 13-15, *supra*. The court of appeals here articulated a similarly concrete—and similarly broad—definition of the fourth and final category of subject matter in Section 101. Unlike the rules at issue in *eBay*, *Festo*, and *KSR*, the machine-or-transformation test is drawn from this Court's precedents and is consistent with the proper, and indeed necessary, approach to analyzing threshold patent-eligibility issues. Clear definitions of the classes of subject matter in Section 101 provide critical guidance to the public, inventors, and the PTO regarding the boundaries of the patent laws—and, by implication, the scope of "what is free for all to use." *Bonito Boats*, 489 U.S. at 151.

4. *The alternative tests for patent-eligibility proposed by petitioners and amici do not appropriately limit patent protection*

The alternative tests advocated by petitioners and amici would sweep within their scope vast swaths of American economic and social life that have never been regarded as the proper domain of patent law. Petitioners urge that Section 101 should embrace any series of steps that produces a useful result, so long as it is a "practical application" of a law of nature, natural phenomenon, or mathematical formula. Br. 42-52. Amici propose a variety of similar formulations. *E.g.*, Accen-

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human methods of the kind petitioners seek to patent. In its repeated articulations of the machine-or-transformation test, this Court has not added a restriction to those Congress imposed, but has simply construed the pertinent statutory language. See *Chakrabarty*, 447 U.S. at 315.

ture Amicus Br. 3; Business Software Alliance Amicus Br. 11-12. While these formulations state necessary preconditions for patent-eligibility—a claimed process that lacks any "practical application" or "useful" result is a paradigmatic unpatentable abstract idea, cf. *Benson*, 409 U.S. at 67—these approaches are seriously deficient as definitions of patent-eligible subject matter.

In addition to divorcing the term "process" from its historical understanding and statutory context, see pp. 16-25, *supra*, petitioners' "practical application" test provides no limiting principle to exclude from patent protection the wide array of innovations that have never "historically been eligible to receive the protection of our patent laws." *Diehr*, 450 U.S. at 184. The annals of useful human knowledge abound with particularized methods of pitching baseballs, singing arias, delivering lectures, running election campaigns, minimizing taxes, defending lawsuits, buying and selling property, and resisting corporate takeovers. Each of these "processes" is practical and useful, and may be nonobvious. None is unpatentably abstract, see *O'Reilly* v. *Morse*, 56 U.S. (15 How.) 62, 113 (1854), and none is merely a mathematical equation in disguise, see *Flook*, 437 U.S. at 594-595. Yet none embodies the sort of invention that the patent laws were designed to protect.[24] See *Diehr*, 450 U.S. at 184, 192; *Flook*, 437 U.S. at 593. Petitioners' test therefore does not perform the crucial differentiating function that Congress intended the subject-matter categories in Section 101 to perform.[25] See *Kewanee Oil Co.*, 416 U.S. at 483; *Diehr*, 450 U.S. at 182.

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[24] In contrast, the machine-or-transformation standard recognizes that the mere presence of a "practical application" does not suffice to make a claimed method patent-eligible, if it is not the type of invention that patent law is intended to protect.

II. SECTION 273 DOES NOT IMPLICITLY EXPAND THE CATEGORIES OF PATENT-ELIGIBLE SUBJECT MATTER IN SECTION 101

Petitioners contend that the First Inventor Defense Act of 1999, Pub. L. No. 106-113, 113 Stat. 1536, which added 35 U.S.C. 273 to the Patent Act, reflects Congress's endorsement of the patentability of methods directed to organizing human activity. Section 273, which Congress enacted the year after the Federal Circuit's decision in *State Street*, provides an affirmative defense against infringement for prior users of patented business methods. See 35 U.S.C. 273(b); see also 35 U.S.C. 273(a)(3) ("For purposes of this section * * * the term 'method' means a method of doing or conducting business."). Contrary to petitioners' argument, Section 273 does not reflect any congressional understanding that Section 101 extends to all business methods, including those directed solely to human activity.

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[25] Acknowledging that the "practical application" test provides no basis for excluding even the most out-of-left-field methods of organizing human activity, petitioners suggest that other requirements for patentability—namely, novelty, 35 U.S.C. 102; non-obviousness, 35 U.S.C. 103; and definiteness, 35 U.S.C. 112—will provide the limiting principles that the "practical application" test lacks. Pet. Br. 41-42. But if Congress had intended these other requirements to be the sole limits on patentability, it would not have provided the subject-matter categories in Section 101. In any event, these requirements are insufficient standing alone to limit patent protection to the scope that Congress intended: a particularized, non-abstract method for pitching a curveball may be novel, nonobvious, and definitely stated. But it should not be the subject of a patent.

In *State Street*, the Federal Circuit held that a claimed invention—which the court found to be patent-eligible as a "machine" under Section 101—was not excepted from patent-eligibility simply because it performed certain stock-valuation functions and therefore concerned a "business method." 149 F.3d at 1371-1372, 1375; Pet. App. 23a n.18; see *id.* at 195a. The court thus repudiated the "business method exception," which some lower courts had used to hold that inventions falling within Section 101's categories of patent-eligible subject matter were nonetheless ineligible for patent protection when they concerned business activities.

Congress understood *State Street* as allowing patent protection for some inventions related to financial and business services that, under the "business method exception," had not previously been thought to be patent-eligible. See H.R. Rep. No. 287, 106th Cong., 1st Sess. 46-47 (1999) (stating that *State Street* confirmed a "very broad scope of subject matter that qualifies for patent protection" by "clarif[ying] that the characterization of subject matter as a method of doing business does not render it unpatentable"); H.R. Rep. No. 464, 106th Cong., 1st Sess. 122 (1999) ("As the Court noted, the reference to the business method exception had been improperly applied."). Concerned that many businesses had been using inventions implicating business methods on the assumption that such inventions were not patent-eligible, *ibid.*, Congress acted to protect such firms from patent suits by later "inventors." Section 273 accordingly provides that—contrary to the ordinary rule in patent law—the good faith prior use of a patented business method is a defense to infringement. See 35 U.S.C. 273(b)(1). Nothing in Section 273 purports to amend or interpret the categories of patent-eligible subject matter in Section 101.[26]

Thus, neither the text nor the history of Section 273 suggests that Congress understood *State Street* as extending patent protection to non-technological processes that are directed solely to the organization of human activity, much less that Congress approved or ratified, *sub silentio*, such a radical departure from the historical scope of patent law.[27] Congress surely would have spoken with greater clarity if it had intended Section 273 to ratify an expansion of the boundaries of patent-eligible subject matter so far beyond those established in 1793 and consistently articulated in this Court's decisions. Cf. *Whitman* v. *American Trucking Ass'ns*, 531 U.S. 457, 468 (2001) (Congress "does not alter the fundamental details of a regulatory scheme in vague terms or ancillary provisions—it does not, one might say, hide elephants in mouseholes.").

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[26] Petitioners construe various statements by individual Members of Congress as evidence that Congress understood *State Street* to permit a patent for any useful series of steps directed to human business activity. Pet. Br. 30-32. These statements, however, provide no evidence that the relevant Members so understood *State Street*. See, *e.g.*, 145 Cong. Rec. 30,634 (1999) (statement of Sen. Schumer) (in response to *State Street*, Section 273 should apply to "[n]ew *technologies*" that employ "both methods of doing business and physical apparatus") (emphasis added). And even if some individual legislators had expressed that understanding, floor statements of individual Members of Congress are entitled to little weight because they do not represent the understanding of Congress as a whole. See *Garcia* v. *United States*, 469 U.S. 70, 76 (1984).

[27] As discussed above, dicta in *State Street* subsequently was invoked by applicants seeking patents for "processes" that would not have been patent-eligible under the machine-or-transformation test. But as the committee reports indicate, Congress, acting within a year of the *State Street* decision, was responding to the decision's actual holding—that inventions that otherwise fall within Section 101 remain patent-eligible even if their usefulness relates to business and financial activities.

Section 273's general reference to "method[s] of doing or conducting business," 35 U.S.C. 273(a)(3), does not suggest that Congress intended all such methods to be patent-eligible. Cf. Pet. Br. 31-33. Section 273 was not enacted to ratify the Federal Circuit's decision in *State Street*, let alone to ratify the broadest possible reading of that decision. Rather, Section 273 was enacted to limit a potential effect of *State Street* by providing protection for businesses that, in the wake of that decision, unexpectedly faced infringement suits. Congress's unqualified reference to "method[s] of * * * conducting business" thus is most naturally read to reflect the understanding that the "business method exception" that *State Street* rejected had previously applied across Section 101's subject-matter categories. The breadth of the special defense enacted in Section 273 reflects the breadth of the business method exception to patent eligibility on which Congress feared businesses had relied. And the enactment of that defense demonstrated congressional concern over the potential impact of granting patents for even those business practices falling within the established understanding of Section 101's terms—not any desire to expand that understanding to encompass still additional business practices.

For much the same reasons, petitioners' reliance (Br. 34-37) on *J.E.M. Ag Supply* is misplaced. In that case, the parties who contested the validity of the relevant patents did not dispute that the inventions (certain hybrid plants) were encompassed by Section 101's language. See 534 U.S. at 131-132. Rather, they argued that two more specific statutes impliedly excluded the plants from the ambit of Section 101. See *id.* at 132. In holding that no such exclusion applied, the Court relied in part on Congress's enactment of a separate provision of Title 35 that assumed such plants were patent-eligible under Section 101. *Id.* at 145. Here, by contrast, Section 273 reflects Congress's understanding that "business methods" are not categorically ineligible for patent protection; but it does not logically suggest that Congress understood Section 101 to encompass non-technological business methods that are ineligible for a patent under the machine-or-transformation test.

Petitioners also note (Br. 34-35) that in *J.E.M. Ag Supply*, the Court relied in part on the PTO's longstanding practice of issuing hybrid plant patents and Congress's apparent acceptance of that practice. 534 U.S. at 144-145. No similar inference of congressional approval is warranted in this case, however, because the PTO has in recent years sought judicial guidance as to the proper treatment of process claims under Section 101. See, *e.g.*, *In re Comiskey*, 554 F.3d 967, 973 (Fed. Cir. 2009). And because the Board unanimously found petitioner's claimed hedging method to be ineligible for patent protection, the *J.E.M. Ag Supply* Court's reference to the Board's "specific expertise in issues of patent law," 534 U.S. at 145, provides no comfort to petitioner here.

Finally, contrary to petitioners' contention (Br. 34), reaffirming the machine-or-transformation definition of "process" would not render Section 273 "meaningless." The machine-or-transformation test does not reinstate the "business methods exception"; to the contrary, it accords patent eligibility to technological innovations regardless of whether they concern financial or other business activities. See Pet. App. 25a (refusing to hold that processes concerning business activities are categorically patent-ineligible). As the court of appeals noted, patent applications directed to business-related methods "are 'subject to the same legal requirements for patentability as applied to any other process or method.'" *Ibid.* (quoting *State Street*, 149 F.3d at 1375-1376). That conclusion is both correct and consistent with Section 273.

III. THE COURT OF APPEALS CORRECTLY REJECTED PETITIONERS' CLAIMED METHOD OF HEDGING FINANCIAL RISK UNDER SECTION 101

A. For the foregoing reasons, the court of appeals correctly held that petitioners' method for hedging risk in the purchase and sale of commodities—a technique for organizing human economic activity only—is not eligible for patent protection under 35 U.S.C. 101. Indeed, the court of appeals was nearly unanimous in that conclusion, voting 11-1 that petitioners' claimed method is ineligible for a patent.[28] The PTO examiner and the five expert administrative judges on the Board were unanimous in concluding that petitioners' application is not directed to patent-eligible subject matter. Pet. App. 4a, 146a.

Petitioners' claimed process is not directed to the operation of a particular machine or apparatus, nor does it involve the transformation of matter into a different state or thing. As the Board explained, petitioners' claims

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[28] Nine of the twelve judges on the en banc court joined the majority opinion. Pet. App. 1a. Of the three dissenting judges, only one would have held that petitioners' hedging method qualifies as a patent-eligible "process" under the Patent Act. *Id.* at 60a-105a (Newman, J., dissenting).

> do not recite any electrical, chemical, or mechanical acts or results; do not directly or indirectly recite transforming data by a mathematical or non-mathematical algorithm; are not required to be performed on a machine, such as a computer, either as claimed or disclosed; * * * and do not involve making or using a machine, manufacture, or composition of matter.

Pet. App. 150a. Even the "Monte Carlo simulations" and "one-tail tests" that petitioners highlight in their brief (at 5-6) involve well-known statistical techniques to which petitioners do not claim to have made any contribution.[29] Rather, as the court of appeals found, petitioners seek to patent "[p]urported transformations or manipulations simply of public or private legal obligations or relationships, [or] business risks." Pet. App. 32a. The court thus correctly rejected petitioners' claimed process as patent-ineligible.

The ineligibility of petitioners' claimed hedging method under the machine-or-transformation test is particularly clear because petitioners' patent application did not identify any machine to be used in the implementation of that method. It should be emphasized, however, that petitioners could not have brought their hedging method within Section 101's coverage simply by stating that a computer would be used to calculate a contractual term for use in a step in petitioners' method, or that a telephone would be used for communications between the contracting parties and the intermediary.

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[29] See B.S. Everitt, *The Cambridge Dictionary of Statistics* 262 (3d ed. 2006) ("Monte Carlo methods"); Michael O. Finkelstein & Bruce Levin, *Statistics for Lawyers* 124-126 (1990) (discussing "one-tailed tests").

Consistent with this Court's decision in *Diehr*, see 450 U.S. at 191-192, the PTO's *Interim Instructions* state (at 5) that, in order for a claimed method to qualify as a patent-eligible "process" under Section 101, "the use of the particular machine or the transformation of the particular article must involve more than insignificant 'extra-solution' activity." (emphasis omitted.) The *Interim Instructions* further explain (at 6) that "[i]nsignificant 'extra-solution' activity means activity that is not central to the purpose of the method invented by the applicant."

Under that standard, merely adding the extra detail that a computer would be used to calculate the fixed rates required by petitioners' claim would be "insignificant." Similarly, even if carrying out the hedging transactions required some type of communication, the specification that a telephone should be used would be insignificant extra-solution activity. The nature of the hedging technique—the method of identifying the risk and counterparties in order to hedge—would not change if e-mail were used instead of a telephone, or if the communications took place in person.[30]

B. Petitioners' hedging method is also unpatentable on the independent ground that it would preempt the abstract idea of hedging consumption risk. See *Benson*, 409 U.S. at 67. Petitioners' application stresses that the claimed method "can be used for any commodity to manage consumption risk in a fixed bill price product." J.A.

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[30] In contrast, petitioners' claims might satisfy the machine-or-transformation definition if they involved a machine implementation central to the process of hedging. For example, the method might be patent-eligible if it conducted hedging transactions online, using a computer network to identify counterparties and initiate the transactions, and a microprocessor to calculate the fixed purchase price.

11. Because the claimed method does not include any steps that meaningfully circumscribe the way in which it is performed—the claim describes no more than "a purely mental process" of performing the required calculations, followed by the unremarkable post-solution step of consummating the transactions (in which no commodities need change hands), *id.* at 36a—the claim "would effectively pre-empt any application of the fundamental concept of hedging and mathematical calculations inherent in hedging" consumption risk.[31] *Ibid.*; see, *e.g.*, *id.* at 139a (Rader, J., dissenting) ("[T]he hedging claim at stake in this appeal is a classic example of abstractness."); *id.* at 184a (Board opinion) ("Because the steps cover ('preempt') any and every possible way of performing the steps of the plan, by human or by any kind of machine or by any combination thereof, we conclude that the claim is so broad that it is directed to the 'abstract idea' itself."). This Court has consistently held that abstract claims of this kind are not patentable under Section 101. See, *e.g.*, *Diehr*, 450 U.S. at 185-187; *Benson*, 409 U.S. at 71-72; *Morse*, 56 U.S. (15 How.) at 113.[32]

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[31] As the court of appeals noted, Pet. App. 18a-19a, 36a, it is immaterial for these purposes that petitioners' claim is limited to hedging consumption risk in the field of commodity sales, or that it requires minor post-solution physical acts (*i.e.*, consummating the hedging transactions). See *Diehr*, 450 U.S. at 191-192.

[32] Petitioners' belated effort to distinguish Claim 4 of the application as non-abstract, Pet. Br. 58-59, is unavailing. Because petitioners did not separately argue the patentability of Claim 4 before the Board or the court of appeals, they have waived any such distinction. E.g., *In re King*, 801 F.2d 1324, 1325 (Fed. Cir. 1986).

CONCLUSION

The judgment of the court of appeals should be affirmed.

Respectfully submitted.

ELENA KAGAN
Solicitor General

MALCOLM L. STEWART
Deputy Solicitor General

TONY WEST
Assistant Attorney General

GINGER D. ANDERS
Assistant to the Solicitor General

SCOTT R. MCINTOSH
MARK R. FREEMAN
Attorneys

CAMERON F. KERRY
General Counsel

QUENTIN A. PALFREY
Associate General Counsel

JOAN BERNOTT MAGINNIS
Assistant General Counsel
U.S. Department of Commerce

RAYMOND T. CHEN
Solicitor and Deputy General Counsel

THOMAS W. KRAUSE
SCOTT C. WEIDENFELLER
Associate Solicitors
U.S. Patent and Trademark Office

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IN THE

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FOR INTELLECTUAL PROPERTY AND
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Respondent.

On Writ of Certiorari to the
United States Court of Appeals
for the Federal Circuit

REPLY BRIEF FOR PETITIONERS

J. MICHAEL JAKES
Counsel of Record
ERIKA H. ARNER
FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.
901 New York Avenue, N.W.
Washington, D.C. 20001
(202) 408-4000

RONALD E. MYRICK
DENISE W. DEFRANCO
FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.
55 Cambridge Parkway
Cambridge, Massachusetts 02142
(617) 452-1600

TC+TA
562HW6

WILSON-EPES PRINTING CO., INC. – (202) 789-0096 – WASHINGTON, D.C. 20002

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IN THE

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REPLY BRIEF FOR PETITIONERS

The Federal Circuit's decision has changed settled law by requiring that every process satisfy its new "machine-or-transformation" test to be eligible for patenting under 35 U.S.C. § 101. Respondent maintains that this mandatory machine-or-transformation test is necessary to confine process patents to the "industrial and technological" arts, a requirement with no basis in the statute or this Court's precedent. The fact that manufacturing processes and machines may have dominated the U.S. patent system during the eighteenth and nineteenth centuries (and even then not completely) is unsurprising and sheds little light on how patents promote progress in the information age of the twenty-first century. As this Court has repeatedly noted, the patent law fulfills its Constitutional mandate by promoting progress in fields yet undiscovered, pushing back the frontiers to reach unforeseen and unforeseeable innovations in all the useful arts.

While Respondent contends that the term "process" in § 101 should be construed by importing the neighboring words of the other statutory categories, it dismisses both the expansive modifier "any" in § 101 and the fact that the statute itself defines the term broadly: "'process' means process, art or method . . . ." 35 U.S.C. § 100(b). Relying instead on various interpretive canons and textual inferences to construe § 101, Respondent neglects to explain how its limited "technological arts" construction of "process" can be reconciled with the actual words of § 101 or the more recent § 273, which provides a defense to infringers of patented "method[s] of doing or conducting business." 35 U.S.C. § 273(a)(3). Respondent discounts both the language of § 273, which explains that patented business methods may be used "in connection with an internal commercial use" or an "arm's-length commercial transfer of a useful end result," and the Congressional joint conference report that underscores Congress's understanding of the types of business methods eligible for patenting under § 101 and subject to the prior user defense. 35 U.S.C. § 273(a)(1); *see* H.R. REP. NO. 106-464, at 122-23 (1999) (Conf. Rep.).

Respondent warns that a ruling for Petitioners would result in patenting of everything from marriage proposals to methods of defending lawsuits. To prevent this onslaught of undesirable patents, Respondent insists that § 101 requires a "limiting principle," namely the machine-or-transformation test for specific technology. On the contrary, eliminating the rigid machine-or-transformation test would rid the patent system of the form-over-substance debate that has dogged § 101 for years. Rather than struggling to determine whether a machine is "particular" enough or whether a claim falls within the ever-changing definition of "technology," the question of patentability should instead focus on the underlying substance of an invention and whether it is novel, nonobvious, particularly described, and properly claimed.

Reversal would remove the pall cast by the decision below over tens of thousands of patents and restore the statute's purposefully expansive framework for patent eligibility, a framework equally suited to promoting progress in the bygone industrial era, today's information age, and the unknowable frontiers of the future. If an invention involves an abstract idea or natural law but the inventor claims its practical application, whether through implementation on a machine or in a transformative process, or by producing a useful result, he may then cross the threshold of § 101 and continue the journey of satisfying the other conditions and requirements of the Patent Act. The right to progress to the next stop along this path is all Petitioners seek.

I. Nothing In The Statute Or This Court's Precedent Requires Limiting Process Patents To Specific "Technology" Defined By The Machine-Or-Transformation Test

To justify the Federal Circuit's requirement that every process must satisfy the machine-or-transformation test for patent eligibility, Respondent resurrects a "technological arts" requirement that has no basis in the statute or this Court's precedent. As the Federal Circuit noted below, the "so-called 'technological arts test' . . . has [n]ever been explicitly adopted by the Supreme Court, this court, or our predecessor court . . . ." Pet. App. 24a. Indeed, the PTO Board of Appeals reversed the examiner's rejection of Petitioners' claims based on the "technological arts" requirement. *Id.* at 180a.[1]

Although the Federal Circuit refused to recognize a "technological arts" requirement in constructing its machine-or-transformation test, Pet. App. 24a-25a, Respondent now relies almost exclusively on it, arguing that process patents have been available only for "technological" processes since the inception of the Patent Act in 1790. Resp. Br. 16-19. A careful construction of the Patent Act, however, provides no support for Respondent's attempt to read either a "technology" or a "machine-or-transformation" requirement into the statute. Instead, the plain language of § 101 merely leads back to the well-settled boundaries of patent eligibility established by this Court. If an invention involves an abstract idea, law of nature, or natural phenomenon, the inventor may patent only a practical application of the principle. That practical application may be shown through implementation on a machine or in a transformative process, or by producing a useful result. Pet. Br. 17, 42-52. But there is nothing in the statute—either then or now—that imposes an additional requirement that a process must fall within the arbitrary boundaries of the "technological arts" to be eligible for patenting.

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[1] The PTO Board previously held in *Ex parte Lundgren*, 2004 WL 3561262, at *5 (B.P.A.I. Apr. 20, 2004), that there is no separate "technological arts" requirement for patent-eligible processes.

A. Respondent's Attempt To Read "Technology" And "Machine-Or-Transformation" Into § 101 Contradicts The Language Of The Statute

To support its construction of § 101, Respondent argues that the term "process" must be confined to the technological arts because the PTO Board of Appeals held that the other categories in § 101 "involve technology." Resp. Br. 26. To buttress this conclusion, Respondent applies the interpretive canon that neighboring words can give more precise content to a statutory term that is "capable of many meanings." *Id.* The statute here, however, specifically defines the term "process" in 35 U.S.C. § 100(b), so no interpretive canon is needed. *See Stenberg v. Carhart*, 530 U.S. 914, 942 (2000) ("When a statute includes an explicit definition, we must follow that definition . . . .").

There is no statutory basis for treating a "process" differently from the other categories of patentable subject matter. Nonetheless, the Federal Circuit and Respondent interpret the term "process" as requiring a machine-or-transformation tie to technology, disregarding the plain definition in § 100 and the broad modifier "any" in § 101. *See, e.g.*, Austin IP Law Ass'n Amicus Br. 5-11. Respondent argues that reaffirming the Court's broad framework for § 101 would "unmoor" processes from the other categories. Resp. Br. 27. But this Court has repeatedly held that a process is "as much the subject of a patent, as a machine, manufacture, or composition of matter. Of this there can be no doubt, and it is abundantly supported by authority." *The Telephone Cases*, 126 U.S. 1, 533 (1888).

Respondent criticizes Petitioners' statutory construction for incorporating this Court's interpretation of § 101 as extending patentable subject matter to include "anything under the sun that is made by man . . . ." Resp. Br. 28; *see also Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980); *Diamond v. Diehr*, 450 U.S. 175, 182 (1981). Respondent and its amici further contend that the Congressional reports quoted by this Court in *Chakrabarty* applied the phrase "anything under the sun" to only the "machine" and "manufacture" categories set forth in § 101. Resp. Br. 28. But nothing in the statute or this Court's decisions dictates that only two of the categories of § 101 are to be construed broadly while the other two are not. *See* Pet. Br. 18-20.

Far from requiring a "technological" definition of the term "process," the Patent Act states: "[t]he term 'process' means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material." 35 U.S.C. § 100(b). "[T]he Patent Act from its inception focused patentability on the specific characteristics of the claimed invention—its novelty and utility—not on its particular subject matter category." Pet. App. 135a (Rader, J., dissenting).

Respondent warns that Petitioners advocate a position that would extend patent eligibility to "any" process that is not a law of nature, natural phenomena, or mathematical formula. Resp. Br. 44. But that is precisely what the statute demands. "The language of § 101 conveys no implication that the Act extends patent protection to some subcategories of processes but not others. It does not mean 'some' or even 'most,' but all." Pet. App. 136a (Rader, J., dissenting). With respect to the subject-matter provisions of the patent law, such breadth is necessary and well accepted. "Broad general language is not necessarily ambiguous when congressional objectives require broad terms." *Chakrabarty*, 447 U.S. at 315. As this Court has repeatedly noted, "Congress plainly contemplated that the patent laws would be given wide scope." *Id.* at 308; *see also J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124, 130 (2001) ("As this Court recognized over 20 years ago in *Chakrabarty*, the language of § 101 is extremely broad." (citation omitted)).

Respondent argues that Petitioners advance a "near-boundless" interpretation of the term "process." Resp. Br. 15. To the contrary, Petitioners, numerous amici, and the dissenters below simply urge this Court to reaffirm the well-settled boundaries of § 101: abstract ideas, laws of nature, and natural phenomena are not patentable, but a practical application of one of these principles may well be eligible for patenting. *Diehr*, 450 U.S. at 187; *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948). Such a practical application may be shown through implementation on a machine or in a transformative process, or in a process that produces a useful result. *See* Pet. Br. 42-47. In addition to these subject matter boundaries, § 101 also limits patent eligibility to only those inventions that are "new and useful" and that satisfy "the other conditions and requirements" of Title 35, including novelty (§ 102), nonobviousness (§ 103), and full and particular description (§ 112).

B. The Constitutional Backdrop And Text Evidence A Broader Scope Of Patentability Than Put Forth By Respondent

Respondent devotes twenty-five pages, or more than half of its argument, to cataloging the types of processes that were typically patented in the eighteenth and nineteenth centuries and tracing the meaning of the word "process" from its Constitutional origin in the phrase "useful arts" through the 1952 Patent Act. While this historical backdrop may support the unremarkable conclusion that manufacturing processes are "useful arts," the opposite remains unproven. The "useful arts" were never limited to only manufacturing processes. History shows that, although patents in nonmanufacturing fields may have been less common, they have regularly issued since the creation of the American patent system.

In Respondent's view of history, however, the term "process" in § 101 must be limited to the industrial and technological arts as defined by the machine-or-transformation test because that is what Thomas Jefferson and his contemporaries meant by the phrase "useful arts." Resp. Br. 16-19.[2] Based on a dictionary from 1828 and some speeches from the early nineteenth century (well after the first Patent Act in 1790), Respondent argues that the phrase "useful arts" was understood only to refer to "manufacturing processes and other applied trades." *Id.* at 16-17. Everyone agrees that manufacturing processes are within the useful arts, but the facts cannot sustain Respondent's opposite contention, *i.e.*, that useful arts must be limited to manufacturing processes. *Id.*

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[2] Respondent argues that Petitioners conceded below that "technological arts" and "useful arts" are synonymous. Resp. Br. 19. In fact, Petitioners argued against the Examiner's "technological arts" rejection (which was later reversed by the Board), and in particular argued that "no special meaning need be given to the phrase 'technological arts,' a phrase that has been devised and defined by the courts, apart from the Constitutional requirement that an invention be in the 'useful arts.'" Pet. App. 193a-194a. Petitioners went on to argue that a process executed by humans could still fall within the "useful arts." *Id.*

Dictionaries more contemporaneous to the time of framing and the first Patent Act evidence a much broader understanding of the phrase "useful arts." For example, the Johnson Dictionary in 1768 defined "art" as "'the power of doing something not taught by nature and instinct'; 'a science'; 'a trade'; 'artfulness'; 'skill'; 'dexterity.'" Pet. App. 82a (Newman, J., dissenting) (quoting SAMUEL JOHNSON'S DICTIONARY OF THE ENGLISH LANGUAGE (3d ed. 1768)); *see also* Accenture & Pitney Bowes Amicus Br. 9 n.4. Further disproving Respondent's conclusion that the "useful arts" were limited to manufacturing processes and applied trades like making clothes and utensils, Resp. Br. 16, is the substantial evidence that the practice of medicine was considered a useful art, even by Thomas Jefferson. Univ. S. Fla. Amicus Br. 6-12. Furthermore, this Court has not interpreted the "useful arts" to exclude financial innovation. *See, e.g.*, *Baker v. Selden*, 101 U.S. 99, 102 (1879) (ruling that copyright cannot protect bookkeeping forms because bookkeeping is a "useful art").

Respondent contends that "pure finance and business" were considered fields of science at the time of framing and are therefore not within the useful arts subject to patenting. Resp. Br. 18. Similarly, Respondent argues that "useful or mechanic" arts were separate from "liberal or polite" arts like poetry, music, and painting. *Id.* at 16-17. Petitioners do not dispute that any principle of "pure" science, such as a mathematical equation, one of the laws of thermodynamics, or a logical syllogism, are not patent eligible until reduced to some practical application. Pet. Br. 19-20, 51. Further, Petitioners do not suggest that patents protect artwork or music; these are the province of copyright protection. *See, e.g.*, *Baker v. Selden*, 101 U.S. at 102-03. Instead, Petitioners submit that fields such as economics, business, information management, and finance are patentable useful arts when directed to specific, practical applications. *See, e.g.*, Accenture & Pitney Bowes Amicus Br. 35-39; Regulatory DataCorp Amicus Br. 29-31.

Respondent quotes at length from the concurring opinion below for the proposition that the English Statute of Monopolies and early English patent practice "left no room" for patents on nonmanufacturing methods. Resp. Br. 19-24. But in fact, the monopolies forbidden under the English statute and abhorred by the framers were those granted for known products and activities that already existed. Pet. App. 83a-84a; Regulatory DataCorp Amicus Br. 27. Concerns over removing established activities from the public domain were addressed by limiting patents to *new* inventions, as the Patent Act has done since its inception. And in any case, the framers chose broader language when empowering Congress to grant patents for useful arts than did the English Statute of Monopolies, so the history of English patent law and practice is of limited use when interpreting our own statute. *See* Pet. Br. 47-52.

C. Patents For Nonmanufacturing Methods May Have Been Less Common, But They Have Issued Throughout The History Of The American Patent System

Respondent argues that § 101 should not be construed to encompass nonmanufacturing methods because historically these types of methods were not patented often. But history reveals that such patents have issued, establishing a long-settled broader understanding of the scope of patentable subject matter.

Respondent notes that process patents granted in eighteenth century England "overwhelmingly" involved manufacturing processes. Resp. Br. 19-20. Given that the purpose of granting monopolies in England was to establish a manufacturing industry in the formerly agrarian country, this is unsurprising. And by admitting that "essentially" no nonmanufacturing process patents issued, Respondent acknowledges that some did. *See* Pet. App. 85a-88a (Newman, J., dissenting). Respondent likewise argues that there was "no pattern" of granting patents for nonmanufacturing methods in eighteenth century America, but stops short of saying that patents could not or did not issue for nonmanufacturing processes in the Patent Act's first decade. Resp. Br. 22-23. That is because such patents did issue. *See* Pet. Br. 50-52.

Similarly, Respondent argues that nonmanufacturing processes were "rarely" patented during the nineteenth century, Resp. Br. 23-24, but the fact remains that patents did issue for methods that were not tied to machines or physical transformations and other inventions in nonmanufacturing fields such as:

- Bookkeeping: Method of Indexing Books, U.S. Patent No. 404,294 (issued 1889);
- Preventing Counterfeiting: Method of Protecting Bank Checks and the Like from Being Raised, U.S. Patent No. 478,294 (issued 1892); and
- Teaching: Means for Teaching Fractions, U.S. Patent No. 151,971 (issued 1874); Method of Teaching Embroidery or Kindred Arts to the Blind, U.S. Patent No. 532,110 (issued 1895).

Even a cursory review of Patent Office records shows that such patenting continued through the twentieth century, when patents issued in a variety of non-manufacturing fields like:

- Finance: Method of Recording and Identifying Intelligence on Bank Checks by Category and of Indexing Cancelled Bank Checks by Category for Subsequent Use, U.S. Patent No. 3,980,323 (issued 1976); Means for Cashing Sales Accounts, U.S. Patent No. 704,168 (issued 1902);
- Recreation: Dancing Chart and Method of Self Instruction, U.S. Patent No. 900,105 (issued 1908); Seating Chart, U.S. Patent No. 1,739,988 (issued 1929); Elimination Draw Poker Game, U.S. Patent No. 4,648,604 (issued 1987); Method of Playing a Question and Answer Board Game, U.S. Patent No. 4,998,736 (issued 1991); Educational Word Rhyming Game, U.S. Patent No. 5,248,148 (issued 1993); Method of Playing a Board Game, U.S. Patent No. 5,441,277 (issued 1995);

- Insurance: Negotiable Instrument, U.S. Patent No. 1,089,113 (issued 1914); Device for Keeping Account of Industrial Life Insurance Premium Collections and the Like, U.S. Patent No. 1,486,378 (issued 1924);
- Teaching: Means for Teaching Speaking and Reading, U.S. Patent No. 660,255 (issued 1900); Means for Teaching Reading of the Facial Expressions Which Occur in Speaking, U.S. Patent No. 726,484 (issued 1903); Method of Instruction, U.S. Patent No. 812,197 (issued 1906); Means for Facilitating the Study of Languages, U.S. Patent No. 778,110 (issued 1904);
- Preventing Counterfeiting: Method of Detecting Counterfeit Articles, U.S. Patent No. 1,198,053 (issued 1916); and
- Advertising: Method of Combining Advertising with Amusement or Instruction, U.S. Patent No. 1,200,399 (issued 1916).

These examples demonstrate that patents have long issued for inventions that are independent of particular machines or industrial manufacturing. The property rights of patent owners and the expectations of the inventing public were settled on this long history of broad subject matter eligibility even before the *State Street Bank* decision. As the framers intended, the patent system has evolved to promote progress in an ever-changing economy, across all existing and new useful arts. Imposing a "technology" requirement based on the machine-or-transformation test would reverse much of this progress.

II. Limiting Process Patents To Specific "Technology" Defined By The Machine-Or-Transformation Test Would Frustrate The Purpose Of The Patent Act

One need look no further than Respondent's brief to see how reading a "technology" requirement into § 101 would diminish the ability of patents to promote progress in new fields of the useful arts. Respondent's reliance on the meaning of "technology" as understood by the founding fathers and during the Industrial Revolution leads to the conclusion that only "industrial and technological methods . . . have historically been eligible for patent protection." Resp. Br. 29. Because patents for nonmanufacturing methods "rarely" issued and were outside "the norm" during the eighteenth and nineteenth centuries, Respondent concludes that "subjects not related to any technological or industrial process were simply not considered the province of patent law." *Id.* at 23-24 & n.8. Limiting patent protection to only those types of inventions that have historically been the subject of patents runs counter to the constitutional mandate to promote progress in the useful arts. Denying patent protection for "inventions in areas not contemplated by Congress when the patent laws were enacted . . . would frustrate the purposes of the patent law. This Court frequently has observed that a statute is not to be confined to the 'particular [applications] . . . contemplated by the legislators.'" *Chakrabarty*, 447 U.S. at 315 (quoting *Barr v. United States*, 324 U.S. 83, 90 (1945)).

Progress in today's information economy is measured in nanoseconds and gigabytes, in engineering new techniques to manage businesses that operate worldwide, and in creating new ways to harness the power of the limitless information now available at the press of a button. Restricting the incentive of patents to only those processes that involve technology as measured by the machine-or-transformation test will not promote the progress of innovation in the twenty-first century. "The innovations of the 'knowledge economy'—of 'digital prosperity'—have been dominant contributors to today's economic growth and societal change." Pet. App. 60a (Newman, J., dissenting). The decision below, and Respondent's defense of it, would remove the incentive of patenting for "many of the kinds of inventions that apply today's electronic and photonic technologies, as well as other processes that handle data and information in novel ways." *Id.*

Respondent claims that the machine-or-transformation test can be used to analyze patent claims in "every extant field of technology and industry." Resp. Br. 29. This assertion is contradicted by the many amicus briefs pointing out the negative effect the test will have in their areas of practical development. *See, e.g.*, Biotechnology Indus. Org. Amicus Br. 14-27; Dolby Labs. Inc. et al. Amicus Br. 7-10; Accenture & Pitney Bowes Amicus Br. 35-39. Moreover, the patent laws were enacted to promote innovation in fields as yet unknown. In fact, "[a] rule that unanticipated inventions are without protection would conflict with the core concept of the patent law that anticipation undermines patentability." *Chakrabarty*, 447 U.S. at 316.

A. The Machine-Or-Transformation Test For Specific "Technology" Threatens Innovation In Many Existing Fields

Though Respondent asserts that the machine-or-transformation test is "broad and technology-neutral," Resp. Br. 36, many existing fields would face uncertain patentability. For example, Respondent argues that its test would "readily encompass" software inventions, *id.* at 38, but the eligibility of software under Respondent's rule would depend largely on "the form in which it is sought to be patented." *Id.* Per Respondent, a claim that uses a computer for data storage or for communicating data over a network would not be patentable under the machine-or-transformation test because these activities would be dismissed as "insignificant extra-solution activity." *Id.* at 39 n.18. On the other hand, Respondent notes that, if the claim described the computer as being programmed to perform the steps necessary to store data or process network communications, the machine-or-transformation test would be satisfied. *Id.* at 38-39. The mandatory machine-or-transformation test would therefore reduce the patent eligibility of computer-implemented inventions to a matter of claim drafting. In such circumstances, patent eligibility would be independent of the actual nature of the invention, which cannot be correct.

Although Respondent suggests that concern over software patent rights is "misplaced," *id.* at 37, the decision below has left scores of patent owners doubting the validity of their patents for software and computer-related inventions. Amici estimate that more than 200,000 software patents have issued and that 20,000 new software patent applications are filed every year. Red Hat Amicus Br. 12; Bus. Software Alliance Amicus Br. 6. District courts continue to invalidate computer-related patents as being unpatentable after the mandatory machine-or-transformation test.[3] Given Respondent's position that most software-related inventions are patentable if claimed using the right terminology, Resp. Br. 38-39 & n.18, it makes little sense to adopt a mandatory rule that would invalidate countless software patents because their claim format is now deemed unacceptable.

Innovations in biotechnology and medicine would likewise be threatened, despite Respondent's assurances to the contrary. *Id.* at 40. Confining patent protection to machine-or-transformation-tied technologies would jeopardize the most innovative segments of medical research. *See, e.g.*, Chakrabarty Amicus Br. 2-3; Biotechnology Indus. Org. Amicus Br. 14-27. The amicus briefs cite many examples of successful diagnostic and medical treatment advances that may now be excluded from patenting, such as a method for predicting prediabetic individuals who are most likely to develop diabetes based on multiple markers in the blood, Adamas Pharm. Amicus Br. 24-25, and a method for treating influenza using a unique combination of existing pharmaceuticals. Boston Patent Law Ass'n Amicus Br. 13-14.

Cutting edge innovations in other fields are similarly threatened by introducing the machine-or-transformation test as a "limiting principle" on patent eligibility under § 101. The "cloud of uncertainty" cast by the decision below extends to audiovisual compression and analytics, noise reduction, seismic analysis, and other fields that involve the manipulation of digital signals. Dolby Labs. Inc. et al. Amicus Br. 9. Also in jeopardy are information-age innovations that derive their value from being machine independent, such as the MP3 data format used in digital music players and the UNIX computer operating system. Eagle Forum Amicus Br. 9; Yahoo! Inc. Amicus Br. 8. The fields of applied finance and industrial engineering would likewise be excluded from "technology" as defined by the machine-or-transformation test, despite the useful innovations in these fields that drive commerce today. *See, e.g.*, Accenture & Pitney Bowes Amicus Br. 36-39; Regulatory DataCorp Amicus Br. 29-32.

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[3] *See, e.g.*, *DealerTrack, Inc. v. Huber*, No. CV 06-2335, 2009 WL 2020761, at *2-4 (C.D. Cal. July 7, 2009); AwakenIP Amicus Br. 20-21; Entrepreneurial Software Cos. Amicus Br. 16-22.

B. The Mandatory Machine-Or-Transformation Test Would Not Achieve Respondent's Promise Of Eliminating "Non-Technological" Patents

Respondent argues that the machine-or-transformation test is necessary to exclude "out-of-left-field" patents. Resp. Br. 46 n.25. Even if the purpose of construing § 101 was to eliminate questionable patents, Respondent's proposed test would fall short. The machine-or-transformation test is both over-inclusive and under-inclusive in limiting patentable inventions to Respondent's arbitrary definition of technology. For example, the much-maligned patent for exercising a cat[4] claims an apparatus with a pedestal and a laser mounted on a motor shaft that could qualify as a particular machine. As Petitioners have noted, many of the patents condemned in Circuit Judge Mayer's dissent below would likely satisfy the machine-or-transformation test because they claim machines like databases and controller units, point-of-sale terminals, and data processing systems and public communication networks. Pet. Br. 40-41.

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[4] U.S. Patent No. 6,701,872 (issued 2004).

The machine-or-transformation test would also be under-inclusive, eliminating patent protection for inventions that almost all would agree should be patent eligible, such as advances in solar and geothermal energy production and laser and sonar innovations. Nev. State Bar Amicus Br. 25-26; Am. Bar Ass'n Amicus Br. 6-7. The test would likewise have prohibited the patenting of foundational inventions in FM radio, cellular phone technology, linear programming, and data compression. Boston Patent Law Ass'n Amicus Br. 9-13; Houston IP Law Ass'n Amicus Br. 14-22.

Affirming the decision below and construing § 101 to require "technology" as defined by the machine-or-transformation test would exalt form over substance, threaten innovation at the frontiers of knowledge, and disrupt patent protection in even well-settled arts. "[T]he statute does not mention 'transformations' or any of the other Industrial Age descriptions of subject matter categories" embraced by the majority below and advanced by Respondent. Pet. App. 142a-143a (Rader, J., dissenting). This Court should therefore reverse the Federal Circuit's decision and reject Respondent's attempt to insert a nonstatutory "technology" limitation into § 101.

III. While § 273 Did Not Broaden The Scope Of § 101, Congress Recognized That Patents May Properly Issue For Business Methods Without Regard To A Machine Or Transformation

A. Section 273 Represents An Equitable Balance Struck By Congress

Despite Respondent's suggestion to the contrary, Resp. Br. 48, Petitioners do not contend that Congress broadened the scope of § 101 when it amended the Patent Act to add a prior user defense for infringers of business method patents. Rather, § 273 represents the "equitable balance" that Congress struck between inventors who patented their business methods under an appropriate interpretation of § 101 and those who chose to keep business practices as trade secrets, perhaps mistakenly believing they were unpatentable. *See* H.R. REP. NO. 106-464, at 122 (1999) (Conf. Rep.); *see also* Pet. Br. 30-34. Because § 273 recognizes patent protection for business methods in commercial use, however, § 101 cannot be construed to exclude them from patent protection. Pet. Br. 29. Respondent's limited "technological arts" construction of process, as implemented by the machine-or-transformation test, would improperly exclude "method[s] of doing or conducting business" and therefore cannot be reconciled with § 273.

More than once, Congress has addressed concerns about particular subject matter through counterbalances in the Patent Act while leaving § 101 unchanged. *See, e.g.*, 35 U.S.C. §§ 181-188 (restricting patents for inventions that may be detrimental to national security); *id.* at § 287(c) (restricting remedies recoverable for a "medical practitioner's performance" of patented "medical activity").[5] As this Court has held, where Congress has acted to implement a policy within its Article I powers, the courts should not disrupt that balance. *See, e.g., Eldred v. Ashcroft*, 537 U.S. 186, 212-13, 222 (2003) ("As we read the Framers' instruction, [Art. 1, § 8, Cl. 8] empowers Congress to determine the intellectual property regimes that, overall, in that body's judgment, will serve the ends of the Clause. . . . The wisdom of Congress' action, however, is not within our province to second-guess."); *Graham v. John Deere Co.*, 383 U.S. 1, 6 (1966). Congress's policy decision in enacting § 273 is within its powers under the Patents and Copyrights Clause because business methods are useful arts. *See* Section I(B), *supra* at 9-10. That balance struck by Congress should not be upset.

B. The Plain Text Of § 273 And Its Legislative History Show Congress's Understanding That Business Method Patents Are Not Restricted To Specific Technology Defined By The Machine-Or-Transformation Test

Respondent argues that Congress did not consider "non-technological processes" to be within the scope of business method patents subject to the prior user defense of § 273. Resp. Br. 48. The statutory text contains nothing to suggest a "technology" requirement; rather, § 273 broadly defines the term "method" as "a method of doing or conducting business." 35 U.S.C. § 273(a)(3); Pet. Br. 31-32. The Congressional joint conference report is in accord. "[T]his subtitle focuses on methods for doing and conducting business . . . whether in the form of physical products, or in the form of services, or in the form of some other useful results; for example, results produced through the manipulation of data or other inputs to produce a useful result." H.R. REP. NO. 106-464, at 122 (1999) (Conf. Rep.); *see also id.* at 123 (recognizing that the defense would apply to infringement of a patent for an "internal method for doing business, such as an internal human resources management process").

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[5] In the years since § 273 was enacted, Congress has considered further counterbalances for business method patents, but has not proposed restricting § 101's scope to exclude their patent eligibility. *See* Pet. Br. 36. For example, bills that would have created a presumption of obviousness under 35 U.S.C. § 103 for certain types of business method claims would have left the broad statutory categories of § 101 intact. *See, e.g.*, H.R. 5364, 106th Cong. § 4 (2000). The current Congress is considering amending § 101 to exclude certain types of tax planning methods, but again, that unenacted proposal would leave the broad statutory categories of § 101 intact. *See* H.R. 2584, 111th Cong. § 1 (2009).

While noting that "floor statements of individual Members of Congress are entitled to little weight," Respondent nevertheless quotes sections of a statement by Senator Schumer to imply that Congress understood business method patents to be limited to methods tied to machines. Resp. Br. 48 n.26. Sen. Schumer's full statement, however, reveals an understanding that business method patents subject to the § 273 defense may involve machines or they may not. 145 CONG. REC. 30634 (1999) (statement of Sen. Schumer) ("The defense will be applicable against method claims, as well as the claims involving machines or articles the manufacturer used to practice such methods (*i.e.*, apparatus claims)."). Sen. Schumer went on to give examples of non-machine-implemented business practices that fall within the defense. "When viewed specifically from the standpoint of the financial services industry, the term 'method' includes financial instruments, financial products, financial transactions, the ordering of financial information, and any system or process that transmits or transforms information with respect to investments or other types of financial transactions." *Id.* Thus, Respondent's position is not supported by the statutory text, the joint conference report, or individual floor statements.[6]

C. Respondent's Rule Would Reduce Patent Eligibility For Business Methods To A Matter Of Form Over Substance

Legislative history and statutory text notwithstanding, Respondent attempts to reconcile § 273 with its view of § 101 by arguing that § 273 applies only to processes that satisfy the machine-or-transformation test. Resp. Br. 50-51. Even if the mandatory machine-or-transformation test may not exclude all business methods from patenting, its application would elevate form over substance. Under Respondent's rule, a business method implemented on a particular machine might be patent eligible, though the same business method claimed without a machine would not be. Thus, the patent eligibility of the underlying subject matter would depend on the creativity of the claim drafter.

When enacting § 273, Congress eschewed such constraints, instructing that "[f]orm should not rule substance." H.R. REP. NO. 106-464, at 123 (1999) (Conf. Rep.). Congress explained that "a method for doing or conducting business that has been claimed in a patent as a programmed machine, as in the State Street case, is a method for purposes of section 273 if the invention could have as easily been claimed as a method." *Id.* In other words, "[t]he issue of whether an invention is a method is to be determined based on its underlying nature and not on the technicality of the form of the claims in the patent." *Id.* Congress fully understood the folly of trying to distinguish a "business method" claim from one drawn to "software," for example. H.R. REP. NO. 106-287, pt. 1, at 46 (1999) ("A software-related invention, for example, that was claimed by the patent draftsman as a programmed machine when the same invention could have been protected with process or method patent claims is a process or method for purposes of § 273."). Rather than haggling over whether a claim recites a "particular" enough machine or a "significant" enough activity to satisfy the machine-or-transformation test, patent eligibility of a business method, as with any other process, should depend on the underlying subject matter and whether the invention falls with the statutory classes of invention for which an inventor "may obtain a patent" pursuant to § 101.

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[6] Petitioners' arguments, in contrast, respect the proper relative weight of these sources, relying first on the statutory text, then on the joint conference report, and finally on the congruent floor statements of both House and Senate Members, which themselves mirror the conference report. *See Garcia v. United States*, 469 U.S. 70, 76 (1984).

IV. The "Practical Application" Framework And Other Boundaries Of The Patent Act, Properly Applied, Are Well-Suited To Eliminate Trivial Patents

Respondent argues that reaffirming this Court's broad, flexible framework for patent-eligible subject matter will unleash a parade of horribles. Citing vague concepts like "pitching baseballs, singing arias, delivering lectures, [and] running election campaigns," seemingly intended to provoke a negative reaction to such trivial patents, Respondent then proclaims entire categories of subject matter unpatentable. Resp. Br. 45. This practice poses several problems.

First, Respondent cites no legal precedent to justify excluding entire categories of subject matter as unpatentable, instead simply stating that none "embodies the sort of invention that the patent laws were designed to protect." *Id.* A fundamental strength of the U.S. patent system is its lack of subject matter exclusions, leaving the door open for emerging technologies. By design, "Congress employed broad general language in drafting § 101 precisely because such inventions are often unforeseeable." *Chakrabarty*, 447 U.S. at 316.

Respondent's proposal to make categorical exclusions from patent eligibility also runs counter to the foundation of U.S. patent law. "Unlike the laws of other nations that include broad exclusions to eligible subject matter . . . U.S. law and policy have embraced advances without regard to their subject matter. That promise of protection, in turn, fuels the research that, at least for now, makes this nation the world's innovation leader." Pet. App. 136a-137a (Rader, J., dissenting). Several amici note that subject matter exclusions like those in Respondent's brief, or the de facto exclusions caused by the machine-or-transformation test, would severely hamper innovation in fields such as medicine and biotechnology, computer software, and industrial engineering. *See, e.g.*, Biotechnology Indus. Org. Amicus Br. 14-27; Boston Patent Law Ass'n Amicus Br. 13; Dolby Labs. Inc. et al. Amicus Br. 7-10; Accenture & Pitney Bowes Amicus Br. 35-39.

Second, Respondent offers only perfunctory descriptions of subject matter it deems categorically unpatentable, without including any particular claims it contends were improperly allowed. Referring generally to "sports moves, marketing techniques, and estate planning strategies" without citing specific claim language seems calculated to provoke the reaction that innovations in these areas could not possibly deserve patents, no matter how novel, useful, and practically implemented. Resp. Br. 26-27. It is dangerous to trivialize broad classes of subject matter based on such cursory examples, however, without any substantive analysis. For example, Respondent argues that risk management and legal methods, including those employing software, ought to be ineligible for patenting regardless of the particular form of the claims. *Id.* at 40-41. This not only restricts patentability solely based on broad subject matter categories, but also prevents analysis of whether such matter would meet any particular test of patentability, even the machine-or-transformation test. Without a more thorough analysis or justification of why Respondent's examples inherently fail any and all tests of patentability, they offer little insight.

Respondent also argues that the "practical application" framework would lead to patents on "vast swaths of American economic and social life." *Id.* at 44. While this argument paints a dire picture, it ignores the many other obstacles such patent applications would face.[7] Once an invention is deemed to fall within one of the four categories of patentable subject matter, § 101 further requires the invention to be "new and useful." 35 U.S.C. § 101. Furthermore, § 101 conditions patentability on satisfying "the conditions and requirements of this title." *Id.* These include novelty, 35 U.S.C. § 102, and nonobvious subject matter, 35 U.S.C. § 103. Particularly since this Court's decision in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), these requirements provide the Patent Office with powerful tools to combat trivial patent applications. For example, it is now clear that § 103 bars patents for improvements that result from mere "common sense" or "ordinary creativity." *Id.* at 420-21.

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[7] Indeed, one particularly dramatic example cited by Respondent, a "multi-step method for proposing marriage," Resp. Br. 36 n.14, actually demonstrates that the practical application framework eliminates undesirable patents. Before the machine-

V. The Shortcomings Of The Machine-Or-Transformation Test For Technology Are Demonstrated By Respondent's Assessment Of Petitioners' Claims

Respondent contends that adding a computer or telephone to Petitioners' claims would not make them patentable because they would constitute only insignificant extra-solution activity. Resp. Br. 52-53. On the other hand, if Petitioners claimed that their hedging process was conducted online, using a computer network and a microprocessor to calculate the fixed purchase price, then apparently it could be patent eligible under the machine-or-transformation test. *Id.* at 53 n.30. Conditioning patent eligibility on implementation formalities, however, underscores

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or-transformation test, one such application was rejected by the Patent Office as being an abstract idea without practical application. U.S. Patent Application 10/378,423, PTO Office Action, 10/17/2006, pp. 2-13. The application was also rejected for obviousness and inadequate description, *id.* 13-15, evidence that the other conditions for patenting also block bad patents.

the arbitrary nature of Respondent's test. This is particularly true where, as here, the distinction between a valid patent and nonstatutory subject matter seems to be no more than skillful claim drafting.

Respondent also argues that Petitioners' claims would preempt the very idea of hedging. Resp. Br. 53. This assertion is incorrect because, as discussed in Petitioners' opening brief, the claimed hedging method is limited to a series of specific steps involving purchase and sale of commodities, with an intermediary commodity provider managing consumption risk costs. Pet. Br. 57-58. Respondent simply dismisses the practical application recited in the claims as "unremarkable post-solution steps," Resp. Br. 54, underscoring the uncertain and subjective nature of the machine-or-transformation test.[8]

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[8] Respondent argues that Petitioners waived any separate argument for the patentability of claim 4 below. Resp. Br. 54 n.32. On the contrary, claims 1 and 4 were grouped and argued separately in Petitioners' appeal brief before the PTO Board of Appeals. (Applicants' PTO Appeal Br., at 4-7, 11-12, 5/23/00). Furthermore, the Board separately reviewed the patentability of claims 1 and 4 and did not base its decision on any single representative claim. Pet. App. 181a-187a.

CONCLUSION

For the reasons set forth above and in Petitioners' opening brief, the decision of the court of appeals should be reversed.

Respectfully submitted,

J. MICHAEL JAKES
Counsel of Record
ERIKA H. ARNER
FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.
901 New York Avenue, N.W.
Washington, D.C. 20001
(202) 408-4000

RONALD E. MYRICK
DENISE W. DEFRANCO
FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.
55 Cambridge Parkway
Cambridge, Massachusetts 02142
(617) 452-1600

AMICUS
CURIAE
BRIEF

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In The
Supreme Court of the United States

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BERNARD L. BILSKI and RAND A. WARSAW,

Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR, PATENT AND TRADEMARK OFFICE,

Respondent.

◆

On Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

◆

BRIEF OF ACCENTURE AND PITNEY BOWES INC. AS *AMICI CURIAE* IN SUPPORT OF PETITIONERS

◆

WAYNE P. SOBON
ACCENTURE
50 W. San Fernando St.
Suite 1200
San Jose, CA 95113
(408) 817-2170

STEVEN J. SHAPIRO
PITNEY BOWES INC.
35 Waterview Dr.
Shelton, CT 06484
(203) 924-3880

MEREDITH MARTIN ADDY
Counsel of Record
JOEL W. BENSON
CHARLES M. MCMAHON
BRINKS HOFER GILSON & LIONE
455 N. Cityfront Plaza Dr.
Chicago, IL 60611
(312) 321-4200

August 5, 2009

Counsel for Amici Curiae

COCKLE LAW BRIEF PRINTING CO. (800) 225-6964
OR CALL COLLECT (402) 342-2831

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INTEREST OF THE *AMICI CURIAE*[1]

Accenture and Pitney Bowes Inc. have joined in this *amicus* brief to encourage the Court to correct a serious mistake in the law. Accenture[2] is one of the world's leading management consulting, technology services, and outsourcing organizations, serving 96 of the Fortune Global 100 and more than three-quarters of the Fortune Global 500.

Accenture collaborates with clients to help them become high-performance businesses. This strategy builds on Accenture's expertise in consulting, technology and outsourcing to help clients create sustainable value for their customers and shareholders. With approximately 177,000 people serving clients in more than 120 countries, Accenture generated more than $23 billion in net revenues for the fiscal year ended August 31, 2008.

Accenture spends annually about $400 million on research and development. As a result of these efforts, Accenture has filed more than 600 U.S. patent applications and obtained more than 360 U.S. patents. Many of these patents and applications are directed to methods for managing or improving a wide variety of business processes within various industrial and organizational settings.

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[1] In accordance with Supreme Court Rule 37, Accenture and Pitney Bowes state that this brief was not authored, in whole or in part by counsel to a party, and that no monetary contribution to the preparation or submission of this brief was made by any person or entity other than the *amici curiae* or their counsel.

[2] "Accenture" refers to the Accenture group of companies including Accenture LLP, an Illinois limited liability partnership, doing business on behalf of Accenture within the United States, and Accenture Global Services GmbH, a Switzerland limited liability company, registered owner of many of Accenture's U.S. patents.

Pitney Bowes is a Fortune 500 technology company that delivers service and innovation to more than two million customers worldwide by managing the flow of information, mail, documents, and packages. Pitney Bowes has consistently been an innovator and a technology leader, with its patent portfolio dating back over a hundred years.

Today, Pitney Bowes employs about thirty-five thousand people worldwide with annual revenues of approximately $6.3 billion. Since 1976, Pitney Bowes has obtained over 2500 U.S. patents and currently has about 550 pending U.S. patent applications. Pitney Bowes' diverse patent portfolio includes various hardware and software implemented technologies, but a significant portion of its portfolio concerns methods for managing and improving business operations.

Accenture and Pitney Bowes have no interest in any party to this litigation or stake in the outcome of this case, other than their joint desire for a correct interpretation and application of the United States Patent Laws.

In accordance with Supreme Court Rule 37, counsel for the *amici curiae* provided timely notice to and obtained written consent to the filing of this brief from counsel of record for the parties. The letters of consent have been filed with the Clerk of the Court.

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SUMMARY OF THE ARGUMENT

The standard for patent eligible subject matter is both simple and elegant. Grounded in the constitutional mandate to promote the useful arts, the patent statute broadly embraces all manner of "useful" inventions, including processes, machines, manufactures, and compositions of matter. 35 U.S.C. § 101. This straightforward and open standard ensures that the patent system adapts to embrace new and innovative technology.

The Court's decisions have reinforced the statute's standard, drawing limits only for claimed inventions that are not truly useful, such as abstract ideas. Such fundamental principles, including laws of nature, physical phenomena, and mathematical formulas, are not useful in themselves and therefore are not subject to patent protection. They become useful only when applied to achieve a practical and beneficial result in the world. Accordingly, a practical application of an abstract idea or a mathematical formula to provide a useful result may be patented, provided it satisfies the other conditions and requirements of the patent statute.

Though the "usefulness" test for patent eligibility is open and flexible, the other conditions and requirements for grant of a patent are far more restrictive. A patentable invention also must be both new and nonobvious. In addition, the inventor must fully and clearly describe the invention to enable others to understand and practice it. The inventor also must claim the invention distinctly to inform the public of its reasonable metes and bounds. Enforcement of these requirements ensures that, after examination, granted patents legitimately promote the useful arts and advance the frontiers of technology, as the nation's founders intended.

The Federal Circuit's *en banc* decision in *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008), imposes a single, exclusive, and unbending "machine-or-transformation" test that arbitrarily limits the scope of patent eligible processes, disregards contrary Constitutional and Congressional mandates, and violates the Court's precedent. The effect of the *Bilski* decision is immediate and sweeping, adversely impacting current and future patent rights. It unnecessarily ties the process category of 35 U.S.C. § 101 to one of the other categories of that section, such as the "machine" or "manufacture" category. The Court should correct the Federal Circuit's error and reaffirm the flexible section 101 standard for process patent eligibility, consistent with the Constitution, the patent statute, and this Court's past decisions. The standard for process patent eligibility is the straightforward threshold question of usefulness.

◆

INTRODUCTION

The *amici curiae*, Accenture and Pitney Bowes, submit this brief to address the core "usefulness" standard of process patent eligibility and to provide a perspective that has received relatively little attention in the record.

The elegance of the constitutional standard flows from a single word: "useful." The concept of usefulness unites the Constitution, the evolving patent statute, and over 200 years of the Court's precedent regarding patent eligibility. The usefulness standard ensures that an invention has utility, meaning that it actually works. Yet, the concept goes beyond simple utility. It demands that an invention have practical application in the world. As a result, abstract ideas are not patentable because they are not useful. But a *practical application* of an abstract idea, which provides a useful result in the world, may be patentable, provided it satisfies the other conditions and requirements of patentability.[3]

Congress implemented the usefulness standard as part of its constitutional mandate to promote the advance of the *useful arts*, broadly drafting the patent statute without technological exclusions, ready to embrace yet unknown innovations. Since then, the Court has consistently applied this open and flexible "usefulness" standard in determining subject matter eligibility for all sorts of inventions, including processes.

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[3] "Useful" in the constitutional and statutory sense must be understood to require practical application of ideas in the world. To be sure, many abstract ideas may be useful in a general sense. For example, Euclid's axioms are useful to generate further geometric theorems or results. However, only a practical application of Euclidean geometry may produce a useful result in the world, thereby satisfying the particular "usefulness" standard of section 101.

Sadly, the *en banc Bilski* decision takes a monumental step backwards. Misinterpreting this Court's precedent, the Federal Circuit rigidly proclaims that a process is patentable subject matter only if "(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing." *Bilski*, 545 F.3d at 954. So, in this age when the usefulness of our inventions and the vitality of our economy increasingly depend on the creative and innovative use of information and services, it seems almost inconceivable that the court forced our patent system to recognize only specific prior, time-worn technologies. The cases construing the statute do not require or imply any type of rigid rule regarding required technology for a patent eligible invention. Indeed, the cases counsel a more flexible approach.

The usefulness of the invention, as a practical application of ideas in the world, is the fundamental key for patent eligibility, not the particular means (i.e. machines or material transformations) employed to implement the invention. Promoting the "useful arts" is as important today as it was when the founding fathers drafted the Constitution. Innovative processes have driven this nation's economy for centuries, and they continue to do so. Though "useful," many of these processes have not involved any particular machine or transformation. Nothing in the Constitution, the patent statute, or this Court's precedent justifies excluding such processes from patent eligibility.

◆

ARGUMENT

I. AN INVENTIVE PROCESS SATISFIES SECTION 101 IF IT IS USEFUL

An invention is eligible for patent protection if it is useful. This standard applies equally to any invention, whether it is a process, a machine, a manufacture, or a composition of matter. 35 U.S.C. § 101.

The "usefulness" standard is rooted in the Constitution and has appeared in every patent statute since the original Patent Act of 1790. It provides a compact rule for identifying patent-eligible subject matter. Nothing in the Constitution, the statute, or the Court's prior decisions justifies changing this standard.

Of course, section 101 presents only the threshold inquiry of eligible subject matter; ultimate patentability is subject to the other conditions and requirements of Title 35. *Id.* Congress codified these other conditions and requirements in 35 U.S.C. §§ 102, 103, and 112, which ensure that patentable inventions are novel, nonobvious, sufficiently described, and distinctly claimed. For purposes of the present case, however, the focus must remain on section 101 and the historically open "usefulness" standard for eligible subject matter.

A. The Constitution Establishes the "Usefulness" Standard for Patentability

The usefulness standard for patent eligibility flows from the Constitution, which empowered Congress to establish a patent system:

> To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.

U.S. CONST., art. I, § 8, cl. 8. From the beginning, the founders intended that the patent system would protect inventions to promote the *useful* arts. The eighteenth century meaning of this phrase, "useful Arts," included but was in fact broader than what we now might consider "technology," and embraced all manner of practical applications of skill or craft that achieve useful results.[4]

By contrast, the copyright system, which was authorized by the same constitutional clause, was designed to promote "Science" by providing authors with exclusive rights to their writings. U.S. CONST., art. I, § 8, cl. 8. Eighteenth century usage of the term "Science" referred to knowledge generally, not just hard sciences.[5]

In the Federalist Papers, James Madison justified both the patent and copyright systems, emphasizing that patentable inventions must be *useful*:

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[4] *See* THOMAS SHERIDAN, GENERAL DICTIONARY OF THE ENGLISH LANGUAGE (1780) (*useful*: "convenient, profitable to any end, conducive or helpful to any purpose;" *art*: "the power of doing something not taught by nature and instinct; a science, as the liberal arts; a trade; artfulness; skill; dexterity; cunning;"). The original sense of "*technology*" derives from the Greek "techné," the primary meaning of which is simply "art, craft" (as opposed to "episteme," which referred to "scientific knowledge, a system of understanding"). *See* OXFORD ENGLISH DICTIONARY, Vol. V. 338, Vol. XVII 705 (2d ed. 1991); *see also* NOAH WEBSTER, DICTIONARY OF THE ENGLISH LANGUAGE 35 (11th ed. 1833). Indeed, the term "technology" was much broader than its current meaning but rather matched the breadth encompassed by the "useful arts." SHERIDAN, *supra* (*technology*: "a treatise on the arts, and explanation of terms of art"). Nothing in these definitions limits "useful arts" or "technology" to machines or physical transformations.

[5] SHERIDAN, *supra* note 3, gives "knowledge" as the first definition of "science." Science therefore broadly encompasses the exposition and development of abstract ideas, which are also the raw fodder for developing practical applications and the useful arts.

> The utility of this power will scarcely be questioned. The copy right of authors has been solemnly adjudged in Great Britain to be a right at common law. *The right to useful inventions seems with equal reason to belong to the inventors.*

THE FEDERALIST NO. 43, 288 (James Madison) (B. Wright ed. 1961) (emphasis added).

Neither the copyright system nor the patent system provides exclusive rights in abstract ideas themselves. Copyright may protect an original expression of an abstract idea, but not the idea itself. *See Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 348 (1991). Similarly, a patent may protect a practical application of an abstract idea that yields a useful result, but also not the idea itself. Thus, ideas, though neither copyrightable nor patentable in their own right, provide the background from which spring copyrightable expressions and patentable inventions.

For example, Einstein's formula, $E=mc^2$, is a law of nature in the abstract – available to all, and not protectable by copyright or patent. A copyright, however, may protect a physics textbook that expresses the formula and its effects in an original way. Likewise, a patent may protect a practical application of the formula that produces a useful result. To be patentable, the invention must satisfy additional conditions,[6] but to satisfy the threshold constitutional eligibility requirement, the invention must simply be "useful."

B. The Patent Statute Mandates the "Usefulness" Standard

Since the original Patent Act of 1790, Congress has sustained and emphasized the constitutionally broad scope of patentable subject matter. The title of the 1790 Act, "An Act to Promote Progress of the Useful Arts," echoed the Constitution's "usefulness" standard for patent eligible subject matter. Patent Act of 1790, Ch. 7, 1 Stat. 109-112 (1790) (current version at 35 U.S.C. § 101 *et seq.*). The 1790 Act authorized issuance of letters patent to an inventor who has "invented or discovered any *useful* art, manufacture, engine, machine, or device, or any improvement therein not before known or used, . . . " *Id.*, § 1 (emphasis added).

Three years later, Congress enacted a new patent act, authorizing grant of a patent to an inventor who has "invented any new and *useful* art, machine, manufacture or composition of matter, or any new and *useful* improvement on any art, machine, manufacture or composition of matter, not known or used before the application." Patent Act of 1793, Ch. 11, 1 Stat. 318-323, § 1 (1793) (current version at 35 U.S.C. § 101 *et seq.*) (emphasis added). Congress changed the language slightly, specifying that the invention had to be "new,"[7] but the "usefulness" standard for patent eligibility remained.

---

[6] Sections 102, 103, and 112 of the present patent statute define the conditions and requirements for patentability (i.e., novelty, nonobviousness, sufficient description, and claim definiteness). 35 U.S.C. §§ 102, 103, 112. Section II, *infra*, addresses these conditions and requirements, which are separate from the eligible subject matter requirement of section 101.

Throughout its evolution, the patent statute always has defined "useful" inventions as the proper subject matter for patent protection. In relevant part, the statute remains largely unchanged from the 1793 Act. Even the Patent Act of 1952, which significantly revised and restructured the statute, left the "usefulness" standard untouched. Patent Act of 1952, Ch. 950, 66 Stat. 792, § 101 (1952) (current version at 35 U.S.C. § 101).

One noteworthy change in the 1952 Act was substitution of the word "process" in place of "art" in what is now known as section 101:

> Whoever invents or discovers any new and *useful process*, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

---

[7] "New" here simply restates the requirement for "invention" or "discovery" in the prior act.

35 U.S.C. § 101 (emphasis added). The 1952 Act also introduced a definition for "process":

> The term "process" means process, art, or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.

35 U.S.C. § 100(b).[8]

The Committee Report for the new statute acknowledged the sweeping breadth of potentially patentable subject matter contemplated by section 101, stressing that it "may include *anything under the sun that is made by man. . . .*"[9] S. REP. No. 82-1979, at 5, *reprinted in* 1952 U.S.C.C.A.N. 2394, 2399 (emphasis added).

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[8] The legislative history accompanying the 1952 Act explains the substitution of "process" in place of the longstanding term "art":

> Referring first to section 101, this section specifies the type of material which can be the subject matter of a patent. The present law states that any person who has invented or discovered any "new and useful art, machine, manufacture, or composition of matter, or any new or useful improvement thereof" may obtain a patent. That language has been preserved except that the word "art" which appears in the present statute has been changed to the word "process." "Art" in this place in the present statute has a different meaning than the words "useful art" in the Constitution, and a different meaning than the use of the word "art" in other places in the statutes, and *it is interpreted by the courts to be practically synonymous with process or method*. The word "process" has been used to avoid the necessity of explanation that the word "art" as used in this place means "process or method," and that it does not mean the same thing as the word "art" in other places.

S. REP. No. 82-1979, at 5 (1952), *reprinted in* 1952 U.S.C.C.A.N. 2394, 2398 (emphasis added).

Hence, section 101 defines processes as a category of invention on par with machines, manufactures, and compositions of matter, and it applies the "usefulness" standard for patent eligibility equally to all. The statute imposes no more particular patent eligibility requirements on processes than it does on the other categories of patentable inventions.

Nor has this Court or any other court imposed additional limitations on the patent eligibility standard for process inventions, at least not prior to *Bilski*.

C. The Court Has Consistently Applied the "Usefulness" Standard

Long before Congress passed the 1952 Act, the Court recognized useful processes as eligible for patent protection. In *O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 130 (1853), the Court explained: "[a] new and useful art or a new and useful improvement on any known art is as much entitled to the protection of the law as a machine or manufacture." Elaborating on the connection between the terms "art" and "process," the Court further noted that "'the term art applies . . . to all those cases where the result, effect, or manufactured article is old, but the invention consists in a new *process* or *method* of producing such result, effect, or manufacture.'" *Id.* (quoting GEORGE TICKNOR CURTIS, A TREATISE ON THE LAW OF PATENTS FOR USEFUL INVENTIONS (1849)).

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[9] The Senate Committee Report further notes that, though an invention may satisfy the broad standard of section 101, it is not patentable unless the other conditions of Title 35 are fulfilled. *See* section II, *infra*.

Twenty-five years later, the Court reaffirmed that a process which produces a useful result is patentable, regardless of the means by which it produces the result:

> [I]t is only *useful* arts – arts which may be used to advantage – that can be made the subject of a patent. . . . Thus, an art – *a process* – which is useful, is as much the subject of a patent as a machine, manufacture, or composition of matter.

The Telephone Cases, 126 U.S. 1, 533 (1888) (emphasis added). In other words, a patentable process must achieve an advantageous result in the world.

Most recently, the Court reaffirmed both the broad usefulness standard for patent eligibility and its applicability to process claims in *Diamond v. Diehr*, 450 U.S. 175 (1981):

> "It is for the discovery or invention of some *practical method or means of producing a beneficial result or effect*, that a patent is

> granted, and not for the result or effect itself. It is when the term process is used to represent the means or method of producing a result that it is patentable, and it will include all methods or means *which are not effected by mechanism or mechanical combinations*."

Id. at 182, n.7 (quoting *Corning v. Burden*, 56 U.S. (15 How.) 252, 267-68 (1853)) (emphasis added).

Of course, the Court has recognized certain exceptions to the scope of patentable subject matter. Abstract ideas, mathematical formulas, laws of nature, and natural phenomena are not proper subject matter for a patent. The Court has repeatedly held that section 101 precludes any claim that would wholly preempt such a fundamental principle. *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948); *Diehr*, 450 U.S. at 185 ("A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right.") (quoting *Le Roy v. Tatham*, 55 U.S. (14 How.) 156, 175 (1852)).

These exclusions remain consistent with the usefulness requirement of the patent statute and its constitutional origins. Abstract ideas, mathematical formulas, laws of nature, and natural phenomena are not useful in isolation, and therefore, they are not patent-eligible subject matter. However, a practical application of such a principle, which provides a useful result in the world, satisfies the usefulness requirement. *Funk Bros.*, 333 U.S. at 130 (product claim applying a law of nature to a new and useful end is patentable).

The Court applied this principle equally to process claims in *Gottschalk v. Benson*, 409 U.S. 63, 67-68 (1972). The Court in *Benson* rejected a claim to the general idea of converting signals from binary-coded decimal ("BCD") form into pure binary form. *Id.* at 65. In practical effect, the Court held the claim to be directed simply to an abstract idea, the mathematical formula for converting from BCD form to binary form. *Id.* at 71-72. Likewise, in *Parker v. Flook*, 437 U.S. 584, 594 (1978), the Court rejected claims involving a mathematical formula, holding that they failed to recite an inventive application of the formula.

The Court elaborated on these exclusions in *Diehr*:

> This Court has undoubtedly recognized limits to § 101 and every discovery is not embraced within the statutory terms. Excluded from such patent protection are laws of nature, natural phenomena, and abstract ideas. "An idea of itself is not patentable." "A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right."

450 U.S. at 185 (internal citations omitted).

The *Diehr* majority took pains to emphasize that the Court's holdings in *Benson* and *Flook* "stand for no more than these long-established principles." *Id.* Addressing each of the *Benson* and *Flook* decisions in detail, the *Diehr* majority explained why the claims in those cases were not patent-eligible. In each case, the applicant sought to patent a mathematical formula, which, "like a law of nature, . . . cannot be the subject of a patent." *Id.* at 185-86. The issue did not turn on machines or transformation, but on usefulness and preemption of an abstract idea.

These cases weave a common thread that patent eligibility does not extend to certain fundamental principles, including abstract ideas, laws of nature, and mathematical formulas. Nor does it depend on the statutory category or the type of technology. Rather, the cases reflect the Court's understanding that the section 101 analysis of a process claim requires an open and flexible approach focused on practical applications that achieve useful results.

II. Sections 102, 103, and 112 – Not Section 101 – Define the "Conditions and Requirements" for Patentability

Some defenders of the Federal Circuit's *Bilski* decision and the exclusive machine-or-transformation test will argue the test is necessary to prevent the issuance of plainly invalid patents. There have been examples of such patents in recent years – patents that never should have issued because they claim old and well-known ideas, they claim more than the inventor actually invented, or they claim hopelessly vague or broad subject matter. Some believe that the machine-or-transformation test provides the means to eliminate such plainly invalid patents by summarily rejecting broad categories of process claims as patent ineligible. However, excluding entire categories of invention from statutory protection is improper. It undermines the patent system, discourages innovation, and is contrary to long-established law.

Section 101 simply provides "a general statement of the type of subject matter that is eligible for patent protection '*subject to the conditions and requirements of this title.*'" *Diehr*, 450 U.S. at 189 (quoting § 101) (emphasis added). The more substantive requirements for whether a particular invention is novel (section 102) and nonobvious (section 103) stand "'wholly apart from whether the invention falls into a category of statutory subject matter.'" *Id.* at 189-90 (quoting *In re Bergy*, 596 F.2d 952, 961 (C.C.P.A. 1979)).

The late Judge Giles Sutherland Rich, who coauthored the Patent Act of 1952, described sections 101, 102, and 103 as doors on the path to patentability, each requiring a separate key. *Bergy*, 596 F.2d at 960-62. A claim directed to eligible subject matter satisfies section 101, but that alone will not justify issuance of a patent. The applicant still must provide the keys to sections 102 and 103.

Section "101 was never intended to be a 'standard of patentability'; the standards, or conditions as the statute calls them, are in § 102 and § 103." *Bergy*, 596 F.2d at 963. This is consistent with the legislative history accompanying the 1952 act, which explains "[s]ection 101 sets forth the subject matter that can be patented, 'subject to the conditions and requirements of this title.' The conditions under which a patent may be obtained follow, and Section 102 covers the conditions relating to novelty." S. REP. No. 82-1979, at 5 (1952), *reprinted in* 1952 U.S.C.C.A.N. 2394, 2399.

Thus, section 101 is not the proper vehicle for controlling the quality of patents. Rather, properly enforcing the novelty and nonobviousness requirements of sections 102 and 103 will prevent issuance of patents that claim old and well-known processes. *See Bergy*, 596 F.2d at 960 (describing sections 102 and 103 as the second and third doors to patentability).

Section 101 also is not intended to protect against overbroad or unsupported claims. Section 112 provides these protections and serves as yet another door on the path to patentability, requiring that the inventor clearly describe and distinctly claim the invention. 35 U.S.C. § 112, ¶¶ 1, 2. Hence, if an inventor submits claims so broad or abstract as to improperly preempt activities outside the reasonable scope of the invention, that must be corrected by proper application of section 112, not section 101.

Although prior to the restructuring of the 1952 Act, the Court's 1853 analysis of Samuel Morse's eighth patent claim perhaps more closely tracks modern-day section 112 than section 101. *Morse*, 56 U.S. (15 How.) at 112-13. In *Morse*, the court held that "[w]e perceive no well-founded objection to the *description* which is given of the whole invention and its separate parts, nor to his right to a patent for the first seven inventions set forth in the *specification of his claims*. The difficulty arises on the eighth." 56 U.S. (15 How.) at 112 (emphasis added). The Court held that the eighth claim was too broad:

> In fine he claims an exclusive right to use a manner and process which *he has not described* and indeed had not invented, and therefore *could not describe* when he obtained his patent. The court is of the opinion that the *claim is too broad*, and not warranted by law.

Id. at 113 (emphasis added).[10] Ultimately, *Morse* may be less about statutory subject matter, and more about the scope of the claims compared with the underlying description of the invention. Since the 1952 Act, courts analyze that issue under section 112 in the form of written description and enablement. Section 112, not section 101, is the proper vehicle for preventing overbroad claims.

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[10] A review of Morse's fifth claim illustrates the flaw in adopting an exclusive machine-or-transformation test:

> "the system of signs, consisting of dots and spaces, and horizontal lines, for numerals, letters, words or sentences, substantially as herein set forth and illustrated, for telegraphic purposes."

Morse, 56 U.S. (15 How.) at 86, 101. The subject matter of this claim, which the Court held to be patentable, is not tied to a particular machine, nor does it transform an article to a different state or thing.

Reliance on sections 102, 103, and 112 to control patent quality also addresses the concerns expressed in *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 126 S. Ct. 2921 (2006) (Breyer, J., dissenting from dismissal for improvidently granted review) about the harm to innovation that will occur if patents are too easily granted. As explained above, concerns about improvidently granted patents must be resolved by proper case-by-case and fact-specific application of the standards set out in sections 102, 103, and 112, which define the "conditions and requirements" for patentability. Brusquely limiting the scope of eligible subject matter under section 101 risks foreclosing valuable existing and unforeseeable future innovations; this is not a reasonable solution to the problem of improvidently granted patents.

III. THE FEDERAL CIRCUIT'S RIGID RULE FOR PATENT ELIGIBILITY HAS NO REASONABLE BASIS

Rigid application of the "machine-or-transformation" test as the sole standard for process patent eligibility disregards the Constitution, the plain words of the patent statute, and this Court's interpretation of section 101. The *Bilski* majority has taken the Court's flexible approach to section 101 and boiled it down to a single, unbending mantra that limits patentable processes to those that employ particular types of technology (specific machines or transformations of articles). As the sole means to determine patent eligibility for process claims, the machine-or-transformation test finds no basis in law.

The tools with which an invention is implemented may give some assurance or clue that the invention operates in the world, as it should, and is not just an abstract idea, but the *usefulness* of the invention provides the fundamental touchstone for patent eligibility. U.S. CONST., art. I, § 8, cl. 8; 35 U.S.C. § 101. The limited machine-or-transformation test harkens back to the early 20th century, its words reminiscent of the "Machine Age," when steel mills, automobile plants, and skyscrapers were in their heyday.[11] Never before has a test for patent eligibility reflected a particular age of history, much less a bygone era.

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[11] *See* RICHARD GUY WILSON ET AL., THE MACHINE AGE IN AMERICA 1918-1941 25 (1986).

A. The Court Has Denounced Rigid Rules in Favor of More Flexible Approaches

Throughout its patent law decisions, the Court has favored flexible, common-sense approaches over rigid, unbending rules. Patent eligibility under section 101 is no exception.

In *Benson*, the Court discussed the machine-or-transformation test as the "clue" to patent eligibility. 409 U.S. at 70. Indeed, the test provides a useful clue in that it demonstrates the invention was achieved by physical processes that are not in themselves abstract. At the same time, the Court explicitly declined to establish this test as the one and only path to process patent eligibility. *Id.* at 71. The focus remained, as it has been for more than two hundred years, on whether the claim was directed to a useful application of an abstract idea as opposed to the underlying idea itself. *Id.* at 71-72.

The Court rejected the claims in *Flook*, as in *Benson*, because they were directed to abstract mathematical formulas. *Id.*; *Flook*, 437 U.S. at 594. By contrast, the applicant in *Diehr* did not seek to patent an abstract idea. 450 U.S. at 187. The majority in *Diehr* considered the machine-or-transformation test, and it included *Benson's* "clue" quote, *id.* at 184, but its focus remained on the broader question of whether the claim at issue was directed to a useful process. *Id.* at 185-92; *see also* section I.C, *supra*.

In the 28 years since *Diehr*, the Court has not revisited section 101. Yet, the Court's recent decisions on other patent issues maintain the same practical preference for flexible, common-sense analyses over unbending, bright-line rules. Rigid rules may be easier to apply, but the Court has repeatedly rejected such shortcuts in patent cases.

The Court emphasized the importance of the flexible approach to patent law in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007). There, the Court rejected the Federal Circuit's rigid "teaching, suggestion or motivation (TSM)" test as the sole test for obviousness under section 103. *Id.* at 407, 415. The unanimous Court explained that section 103 "must not be confined within a test or formulation too constrained to serve its purpose." *Id.* at 427.

In another recent case, *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722 (2002), the Court rejected the Federal Circuit's "complete bar test," an unbending approach to the doctrine of prosecution history estoppel. Again speaking unanimously, the Court cautioned, "we have consistently applied the doctrine in a flexible way, not a rigid one." *Id.* at 738.

In its most recent patent decision, the Court rejected an inflexible rule excluding method claims from the doctrine of patent exhaustion. *Quanta Computer, Inc. v. LG Elecs., Inc.*, 128 S. Ct. 2109

(2008). The unanimous Court noted, "[o]ur precedents do not differentiate transactions involving embodiments of patented methods or processes from those involving patented apparatuses or materials." *Id.* at 2117. The Federal Circuit had erred by rigidly limiting patent exhaustion to apparatus claims. *Id.* at 2117-18. This Court concluded that the patent exhaustion analysis for a process claim depends on the facts of the particular case, just as it does for an apparatus claim. *Id.* at 2118.

As in *Quanta*, the Federal Circuit's decision in *Bilski* to treat process claims differently from apparatus claims by establishing its rigid machine-or-transformation test improperly restricts the scope of patent eligibility established in section 101.

B. The Federal Circuit Departs from the Court's Flexible Approach to Section 101

The Federal Circuit's new interpretation of section 101 directly conflicts with the Court's controlling decisions. The Court has never held the machine-or-transformation test to be the sole standard of process patent eligibility. *See*, *e.g.*, *Benson*, 409 U.S. at 71 (declining to hold that no process patent could ever qualify if it does not satisfy the machine-or-transformation test). *Bilski* is yet another example of the Federal Circuit departing from the Court's established, flexible approach in favor of a rigid, bright-line rule.

The *Bilski* majority relied heavily on its particular interpretation of *Benson*, *Flook*, and *Diehr*. Indeed, as discussed above, the Court considered the machine-or-transformation test in each of these three cases. The Federal Circuit's mistake, however, was adopting this as the *only* test for process patent eligibility. Rather, the Court has consistently held the machine-or-transformation test as only an example of how a process may satisfy section 101's usefulness requirement. Rather than dictating one particular rigid and age-anchored test, the Court's section 101 decisions consistently require a flexible patent eligibility analysis that adapts to new inventions that achieve useful results:

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a "different state or thing." *We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.*

Benson, 409 U.S. at 71 (emphasis added).

Nor did the Court in *Flook* establish the machine-or-transformation test as the touchstone of patent eligibility. Indeed, the *Flook* Court noted that "[t]he line between a patentable 'process' and an unpatentable 'principle' is not always clear. Both are 'conception[s] of the mind, seen only by [their] effects when being executed or performed.'" 437 U.S. at 589 (quoting *Tilghman v. Proctor*, 102 U.S. 707, 728 (1880)). This hardly supports the exclusive and inflexible rule the Federal Circuit has now imposed. Rather, it again demonstrates that the practical application of the invention, its "effects when being executed or performed," is key to differentiating an un-patentable abstract idea from a useful and patent-eligible process. *Id.*

The *Bilski* majority focuses on one particular sentence in a footnote of the *Flook* opinion: "[a]n argument can be made [that the Supreme] Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a 'different state or thing.'" *Bilski*, 545 F.3d at 979-80 (quoting *Flook*, 437 U.S. at 589 n.9). However, the Court squarely rejected that interpretation in the next sentence: "[a]s in *Benson*, we assume that a valid process patent *may issue even if it does not meet one of these qualifications of our earlier precedents*." *Flook*, 437 U.S. at 589 n.9 (emphasis added).

In its analysis of *Diehr*, the Federal Circuit again focused too narrowly on the machine-or-transformation test as the only "clue" to patent eligibility. *Bilski*, 545 F.3d at 956 (quoting *Diehr*, 450 U.S. at 184). In doing so, the Federal Circuit missed the broader, flexible approach that the majority applied in *Diehr* – the same approach the Court had used in *Benson* and *Flook*.

The majority in *Diehr* described the machine-or-transformation test, not as *the* test for patent eligibility, but as one *example* of such a test:

> when a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (*e.g., transforming or reducing an article to a different state or thing*), then the claim satisfies the requirements of § 101.

Diehr, 450 U.S. at 192 (emphasis added). The "*e.g.*" in this passage demonstrates that the machine-or-transformation test is just an example, not an exclusive test.

The remainder of the *Diehr* opinion reaffirms this distinction. If the machine-or-transformation test had been the touchstone of patent eligibility, the majority could have ended its opinion after section II. *See Diehr*, 450 U.S. at 184. Instead, the *Diehr* majority continued with sections III and IV, analyzing the claim in detail to determine whether it improperly covered an abstract mathematical formula or properly covered a practical application of the formula to a new and useful end. *Id.* at 185-92.

None of the Court's decisions have turned on a rigid application of the machine-or-transformation test. Indeed, this test may have guided the Court in *Benson* and *Diehr*, but the Court has never adopted it as the one and only standard for process patent eligibility.[12] Rather than following this Court's guidance, the *Bilski* decision has disregarded precedent. In the face of not only the *Benson*, *Flook*, and *Diehr* decisions, but also the Court's more recent rejections of narrow rules in *KSR* and *Festo*, the Federal Circuit in *Bilski* adopted yet another rigid rule.

C. The Federal Circuit Ignores Recent Congressional Action Embracing the Flexible Approach to Section 101

The Federal Circuit's decision to require a rigid machine-or-transformation test also ignores the intent of Congress, as expressed in the legislative history of 35 U.S.C. § 273. In the immediate aftermath of *State St. Bank & Trust Co. v. Signature*

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[12] The Federal Circuit's view of this Court's decisions is curious and disturbing. The Federal Circuit noted that the Court was "equivocal" in the *Benson* and *Flook* decisions when it expressly declined to hold that no process could ever be patentable without satisfying the machine-or-transformation test. *Bilski*, 545 F.3d at 956. The Federal Circuit reasoned, "this caveat was *not repeated* in *Diehr* when the Court reaffirmed the machine-or-transformation test." *Id.* (emphasis in original). Under the Federal Circuit's logic, the Court must repeat every caveat in every subsequent opinion to ensure lower courts do not interpret the Court's silence as overruling its previous decision. Such analysis also ignores the Court's use of the "*e.g.*" signal in *Diehr*, which was consistent with the express holdings and flexible analysis in *Benson* and *Flook*.

Fin. Group, Inc., 149 F.3d 1368 (Fed. Cir. 1998), Congress enacted section 273 to limit liability for infringement of a business method patent by a prior inventor. Congress dealt with this enforcement issue by passing narrowly drawn legislation that did not limit the scope of patent eligibility for business methods. Indeed, Congress explicitly recognized the eligibility of business methods for patent protection. *See* 35 U.S.C. §§ 273(a)(3), 273(b)(1). The majority opinion in *Bilski* makes no mention of this Congressional action, let alone wrestles with its implications.

Important for purposes of the present case, Congress acknowledged and embraced the Federal Circuit's prior, reasoned "usefulness" test for patent eligibility, from *State Street Bank*. That test mirrored this Court's long-standing flexible approach to patent eligible subject matter. *See State St. Bank,* 149 F.3d at 1373 ("Unpatentable mathematical algorithms are identifiable by showing they are merely abstract ideas constituting disembodied concepts or truths *that are not 'useful.'* From a practical standpoint, this means that *to be patentable an algorithm must be applied in a 'useful' way.*") (emphasis added). At that time, the Federal Circuit noted that "[i]t is improper to read limitations into § 101 on the subject matter that may be patented where the legislative history indicates that Congress clearly did not intend such limitations." *Id.*[13]

When it enacted section 273, Congress embraced this flexible approach in its Joint Conference report as the "essential question" of patent eligibility. H.R. CONF. REP. No. 106-464, at 122 (1999). It is ironic that the Federal Circuit has now abandoned this test, less than ten years after crafting it to mirror the Court's precedent and receiving Congressional approval.[14]

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[13] The Federal Circuit's now-abandoned usefulness test (referred to as the "useful, concrete, and tangible result" test) compactly summarizes the appropriate boundary between abstract idea and useful application. "Usefulness" is the core constitutional and statutory test. The Federal Circuit added "concrete" and "tangible" modifiers to its formulation. Though not expressed in the statute, the Federal Circuit may have added these modifiers to note that the application must be reasonably specific and occur in the world and not, for example, solely in one's mind. These principles are bound up in the statutory meaning of "useful."

[14] When it enacted section 273, Congress accepted and embraced a variety of patentable methods and processes, many of which would fail the new machine-or-transformation test:

> In order to protect inventors and to encourage proper disclosure, this subtitle focuses on methods for doing and conducting business, including methods used with internal commercial operations as well as those used in connection with the sale or transfer of useful end results – whether in the form of physical products, *or in the form of services, or in the form of some other useful results; for example, results produced through the manipulation of data or other inputs to produce a useful result.*

H.R. CONF. REP. NO. 106-464, at 122 (emphasis added).

IV. THE "MACHINE-OR-TRANSFORMATION" TEST IS NOT A RELIABLE INDICATOR OF USEFULNESS

In effect, the Federal Circuit's *Bilski* decision excludes many useful business-related processes from patent eligibility. These innovative methods, though useful, are not tied to any particular machine and do not transform any article to a different state or thing. Yet, in today's information economy, these methods demonstrate their usefulness in many ways.[15] Wholesale prohibition of patent applications for business-related methods, regardless of whether they satisfy the requirements of sections 102, 103, and 112, runs counter to the founders' mandate to promote the useful arts – the very foundation of our patent system.[16]

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[15] The "traveling salesman problem" (TSP) provides a helpful example. The TSP is an abstract idea in combinatorial optimization. *See* DAVID L. APPLEGATE ET AL., THE TRAVELLING SALESMAN: A COMPUTATIONAL STUDY (Princeton University Press 2006). The idea is to identify the shortest possible route that enables a salesman to visit each of a list of cities only once, given the distance between each pair of cities. Engineers have developed practical and useful applications of the TSP to optimize delivery and service routing, microchip manufacturing, and genome sequencing, to name a few of the myriad of useful applications.

[16] Ironically, the machine-or-transformation test is not only under-inclusive, but also over-inclusive. Some processes involving machines are not useful at all. The Manual of Patent Examining Procedure instructs PTO examiners to reject claims directed to perpetual motion under section 101 because the intended result is physically impossible and therefore lacks

(Continued on following page)

A. Useful Processes May or May Not Be Tied to a Machine or Transform an Article

Innovative, useful processes thrive in many areas beyond the "traditional" scientific and engineering fields. To remain competitive in today's information economy, companies and governments rely on new and useful business processes, whether as methods for managing organizations of people; as processes provided through software, internet, and computer interfaces; or as other innovative methods of promoting their business ends. Business processes affect the activities of both people and organizations by applying scientific, mathematical, and engineering principles to achieve practical results, operating on real entities in the world.

The *amici curiae* develop innovative processes that benefit businesses and governments every day. For example, Accenture has developed and implemented supply chain systems that manage transportation logistics for moving products from manufacturing sites to retail stores. In the huge and growing industry of business process outsourcing, Accenture has automated management reporting methods for outsourced business operations. Accenture also has integrated telecommunications

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utility. MPEP § 706.03(a)(II). Thus, even if it involves a machine, a process intended to achieve perpetual motion is still not patent-eligible because it lacks utility; it simply cannot be useful under section 101.

services for cable, telephone and the Internet, all operating together with enhanced capabilities and convenience.

Pitney Bowes operates as a leader in an industry that manages the flow of information, mail, documents, and packages to customers worldwide. To maintain its leadership role, Pitney Bowes constantly innovates and invents in such areas as secure funds transactions, data management, and material handling workflow processes, providing improvements in productivity, efficiency, and security.

These innovations are not exhaustive, but they demonstrate that Accenture and Pitney Bowes are not in the business of promoting abstract ideas. Each and every one of these processes and hundreds of others provide economic value and advantage in the world, though they often require neither machine nor transformation.

Many of the processes that Accenture and Pitney Bowes develop come from a field known as industrial engineering, which has a long history of process innovation. Broadly speaking, industrial engineering involves the practical application of mathematics, logic, economics, operations research, engineering, and social sciences to improve the operations of integrated systems in industry, finance, and business management.

The American Institute of Industrial Engineers defines "industrial engineering" as:

> concerned with the design, improvement and installation of integrated systems of people, materials, equipment and energy. It draws upon specialized knowledge and skill in the mathematical, physical and social sciences together with the principles and methods of engineering analysis and design to specify, predict and evaluate the results to be obtained from such systems.

GAVRIEL SALENDY, HANDBOOK OF INDUSTRIAL ENGINEERING 5 (John Wiley & Sons, Inc., 3d ed. 2001).

Industrial engineers focus their applied scientific, mathematical, and engineering improvements *upon systems of human organizations* ("enterprises"), which can be anything from a single person's activity to a larger corporate, nonprofit, or governmental organization. "[T]he systems designed by industrial engineers *involve people as basic components*." WAYNE C. TURNER ET AL., INTRODUCTION TO INDUSTRIAL AND SYSTEMS ENGINEERING 3 (Prentice Hall, 3d ed. 1993) (hereinafter "INTRODUCTION TO INDUSTRIAL AND SYSTEMS ENGINEERING") (emphasis added). The PTO has long accepted "industrial engineering" as a "recognized technical subject" for eligibility to become a patent attorney. *See* U.S. Patent & Trademark Office, General Requirements Bulletin for Admission to the Examination for Registration to Practice in Patent

Cases Before the United States Patent and Trademark Office (Jan. 2008) http://www.uspto.gov/web/offices/dcom/olia/ocd/grb.pdf.

Advances in industrial engineering have produced countless useful processes, many of which are not tied to a particular machine and do not transform any article to a different state or thing. *See* INTRODUCTION TO INDUSTRIAL AND SYSTEMS ENGINEERING at 13-15; ADEDEJI B. BADIRU, HANDBOOK OF INDUSTRIAL AND SYSTEMS ENGINEERING 4-8 (Taylor & Francis Group 2006) (describing the development of industrial and systems engineering from the year 1440 to the present). Yet, the unquestioned economic progress that these innovative, practical applications of science and engineering to business organizations and processes has produced, especially for the United States, underscores its importance to the "[p]rogress of . . . useful [a]rts," U.S. CONST. art. I, § 8, cl. 8.

The Federal Circuit's new machine or transformation test risks making these particular, practical fruits of human progress uniquely unpatentable. But neither the patent statute nor this Court require that result. So long as the steps of a new and useful business-related method taken as a whole represent more than just an abstract principle, the business-related method should be eligible for patent protection under section 101. If the process further satisfies the conditions and requirements of sections 102, 103, and 112, then its inventor should be granted a patent for the invention.

B. The "Machine-or-Transformation" Test Forecloses Useful Innovation Well Beyond the Bilski Claims

The Bilski patent application discloses and claims a process for reducing risk in hedge fund transactions, including transactions between separate market participants. Although the Federal Circuit rejected the Bilski claims for not satisfying the machine-or-transformation test, the claims appear to recite a specific and useful application of a hedging process between market participants in the world.[17]

The management of risk and optimization of financial reward is an essential part of the modern economy. If a process provides a beneficial way of managing risk, then it is useful regardless of whether it employs a machine or transformation. Accenture operates in an industry that requires very sophisticated analyses of risks and rewards across a range of businesses, including insurance claim analysis, energy commodities transactions, and credit risk management, among others. Accenture develops and sells management and control processes in these industries against considerable competition worldwide.

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[17] Whether the Bilski claims satisfy the other conditions and requirements for patentability, including novelty, nonobviousness, enablement, and definiteness, should be considered under sections 102, 103, and 112, not section 101. *See* section II, *supra*. Moreover, whether the Bilski claims are patentable at the end of examination is irrelevant for purposes of identifying the correct process patent eligibility standard.

Accenture's new and useful inventions enhance productivity, efficiency, and income for its clients. Pitney Bowes' developments in the areas of secure funds transactions, material handling processing, and data management provide similar benefits and advantages. Yet, these useful results frequently can be achieved with processes that do not require any particular machine or transformation of matter.

The exclusive machine-or-transformation test also forecloses patent protection for other broad categories of cutting edge innovation. The modern software, financial, and life science industries, among others, all rely on process patents to protect their investment in research and development. Section 101 embraces these 21st century processes, which employ useful, specific applications of general principles, and yet frequently do not involve particular machines or material transformations. As the Court has acknowledged, neither it nor Congress intends to "freeze process patents to old technologies, leaving no room for the revelations of the new, onrushing technology." *Benson*, 409 U.S. at 71.

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CONCLUSION

For the foregoing reasons, Accenture and Pitney Bowes respectfully request that the Court preserve broad access to the U.S. patent system by reaffirming the flexible "usefulness" test, including the prohibition on patenting abstract ideas, natural phenomena, and laws of nature.

Respectfully submitted,

WAYNE P. SOBON
ACCENTURE
50 W. San Fernando St.
Suite 1200
San Jose, CA 95113
(408) 817-2170

STEVEN J. SHAPIRO
PITNEY BOWES INC.
35 Waterview Dr.
Shelton, CT 06484
(203) 924-3880

MEREDITH MARTIN ADDY
Counsel of Record
JOEL W. BENSON
CHARLES M. MCMAHON
BRINKS HOFER GILSON & LIONE
455 N. Cityfront Plaza Dr.
Chicago, IL 60611
(312) 321-4200

Counsel for Amici Curiae
Accenture & Pitney Bowes

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CURIAE
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In The
Supreme Court of the United States

◆

BERNARD L. BILSKI and RAND A. WARSAW,

Petitioners,

v.

DAVID J. KAPPOS, Under Secretary of Commerce
for Intellectual Property and Director,
Patent and Trademark Office,

Respondent.

◆

**On Writ Of Certiorari To The
United States Court Of Appeals
For The Federal Circuit**

◆

AMICUS CURIAE BRIEF IN SUPPORT OF THE RESPONDENT, SUBMITTED ON BEHALF OF ADAMAS PHARMACEUTICALS, INC. AND TETHYS BIOSCIENCE, INC.

◆

ROBERT P. BLACKBURN
2930 Domingo Ave. #209
Berkeley, California
94705
(510) 898-5000

KAREN I. BOYD
Counsel of Record
TURNER BOYD LLP
2625 Middlefield Rd. #675
Palo Alto, California
94306
(650) 533-7572

*Counsel for Adamas
Pharmaceuticals, Inc. and
Tethys Bioscience, Inc.*

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INTEREST OF THE *AMICI CURIAE*[1]

Tethys Bioscience and Adamas Pharmaceuticals have joined in this *amicus* brief to encourage the Court to correct a serious mistake in the law.

Tethys Bioscience is a predictive personalized medicine company developing novel tests to identify those at risk of diabetes, by discovering, developing, and commercializing novel biomarkers. Adamas Pharmaceuticals, Inc. is a pharmaceutical company focused on development treatments of infectious diseases, including H1N1 "Swine" flu.

Tethys and Adamas have no interest in any party to this litigation or stake in the outcome of this case, other than their joint desire for a correct interpretation and application of the United States Patent Laws.

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[1] In accordance with Supreme Court Rule 37, Tethys Bioscience and Adamas Pharmaceuticals state that this brief was not authored, in whole or in part, by counsel to a party, and that no monetary contribution to the preparation or submission of this brief was made by any person or entity other than the *amici curiae* or their counsel. In accordance with Supreme Court Rule 37, counsel for the *amici curiae* provided timely notice to and obtained written consent to the filing of this brief from counsel of record for the parties. The letters of consent have been filed with the Clerk of the Court.

SUMMARY OF THE ARGUMENT

This case provides an opportunity to eliminate problematic business method patents and establish a § 101 subject matter test that is objective and predictable, not duplicative of other patentability requirements, consistent with Congress's legislative scheme, and in compliance with United States treaty obligations. The "Machine or Transformation" test ("MoT" test) achieves none of these objectives, and instead invalidates a much broader swath of method patents, destroying investment incentives in key U.S. industries and subjecting the United States to trade sanctions. Conversely, a correct interpretation of § 101 allows this Court to affirm the USPTO's rejection of the claims at issue because they are to a non-technological process, the only exclusion from patentability permitted by treaty obligations and consistent with Congress's intent.

The MoT test, which denies patents for technological processes not involving a specialized machine or transformation of an article, violates at least two treaties to which the United States is a party. The 1994 TRIPS Agreement contains a provision – spearheaded by the United States and key American industries – requiring signatory countries to extend patent protection to all technologies without discrimination, with limited exceptions. The earlier NAFTA treaty contains an essentially identical provision. Since the MoT test discriminates against newer technologies, particularly cutting edge technologies of key industries in the developed world, ratification of the

MoT test by this Court will subject the United States to trade disputes that will be independently adjudicated by the World Trade Organization ("WTO"). Furthermore, this retrenchment from broad patentability at home will seriously undermine bilateral efforts to gain intellectual property protection in the export markets of domestic industries.

The MoT test also thwarts Congress's statutory scheme for providing investment incentives through the patent system. Congress provided a broad subject matter provision because it is impossible to predict the future course of technology and the risk was too great that investments in unforeseen yet beneficial technology would not occur. Indeed, Congress previously considered concerns that patent protection had gone too far with respect to diagnostic, surgical and therapeutic methods. It specifically rejected an attempt to eliminate such subject matter from patent protection. Instead, Congress fashioned a targeted solution to the problem that exempted physicians from suit for patent infringement: 35 U.S.C. § 287(c). The MoT test, however, directly overrules Congress's choice to maintain broad subject matter coverage for healthcare-related technology.

This Court must not make the same mistake the Federal Circuit has made by confusing the roles of the legislature and the judiciary, thereby obstructing industrial policy set through the political process and subjecting the United States to disputes over its treaty obligations. Appellate courts, with limited records and briefs, are ill-equipped to explore the complex economic and technical facets of issues raised by many of the *amicus curiae*. Congress, however, is equipped to investigate these issues beyond page-limited briefs. For example, Congress could consider whether other limitations on patentability (*e.g.*, novelty, nonobviousness, enablement, written description and definiteness) are better vehicles for targeted solutions. The range and nuance of the remedies at Congress's disposal, like creating § 287(c), go far beyond the limited options available to this Court.

Amici Tethys and Adamas are prime examples of the soundness of Congress's policy to encourage investment in new technologies resulting in advances of incalculable value to this country. *Amicus* Tethys has invented a way to identify persons who will become diabetic years in advance with sufficient precision to allow targeted drug and lifestyle interventions that will prevent the disease before it arises. Beyond the importance to the patient, this is a momentous advance in healthcare economics. It is substantially cheaper to prevent diabetes than to treat it. Currently, one in five healthcare dollars is diabetes related. Thus, controlling these costs is a major initiative for federal deficit reform.

Amicus Adamas has made inventions not only important to national health, but to national security as well. There have been few reliable tools and treatments available to meet the swine flu pandemic expected this winter. Only limited amounts of vaccine will be available. Resistance to the drugs in the national stockpile has appeared and could become widespread. Public officials are bracing for what could be the greatest health crisis since the Spanish Flu of 1918-20. Pandemic flu is recognized as a top national security threat. Fortunately, Adamas has invented methods of using and deploying existing flu drugs that provide more rapid recovery, prevent the development of drug resistance, and may even restore sensitivity to drugs in resistant viruses. Adamas has initiated clinical trials, and the U.S. Navy is collaborating because pandemic flu is a major force readiness concern.

The *amici* are representative of the numerous research-based startups working at the frontiers of medical science. The ability to obtain patent protection, and thus attract investment for their high-risk research, is in serious jeopardy from the MoT test. Ending the Congressionally created patent system's incentive to invest in technologies like those *amici* have developed would not only be improper for the judiciary, it would also be tragically misguided.

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ARGUMENT

I. When § 101 Is Properly Construed as Embracing Only Technological Processes, Bilski's Claims Are Not Patentable, But the Machine or Transformation Test ("MoT" test) Will Place the U.S. in Violation of International Treaty Obligations, Undermine U.S. Foreign Policy, and Is Contrary to Congressional Intent.

A. In Signing and Ratifying TRIPS, the Executive and Congress Committed the U.S. to Broad Patent Protection for All Types of Technology. The MoT Test Limits Patent Protection for Some Areas of Technology in Violation of TRIPS Article 27(1) and Undermines Decades of U.S. Foreign Policy.

The 1994 Agreement on Trade-Related Aspects of Intellectual Property Rights ("TRIPS")[2] was the culmination of years of U.S.-led negotiations to strengthen intellectual property protection around the world for the benefit of, among others, the U.S. healthcare industry, which faced exclusion from patentability for its key technologies in many developing countries. *See generally*, 1 Devereaux *et al.*, *Case Studies in U.S. Trade Negotiation* 42-76 (2006). The negotiations leading to the TRIPS agreement have been characterized "as having been initiated and driven by U.S. knowledge-based industries," such as U.S. healthcare companies. *Id.* at 43. The resulting TRIPS Article 27(1) prohibits member states from discriminating in their patent systems against *any* field of technology:

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[2] Agreement on Trade-Related Aspects of Intellectual Property Rights, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, Legal Instruments – Results of the Uruguay Round, 33 I.L.M. 1197 (1994).

> Subject to the provisions of paragraphs 2 and 3, patents shall be available for any inventions, whether products or processes, *in all fields of technology*, provided that they are new, involve an inventive step and are capable of industrial application. (Emphasis added).

The Federal Circuit's MoT test, by disqualifying patent protection for technological processes that do not involve a transformation of an article or are not tied to a particular machine, places the United States in breach of its treaty obligations and undermines decades of foreign policy related to intellectual property. Numerous examples of such technological discrimination by the MoT test have been discussed in other *amici* briefs (such as software and data processing inventions), and need not be repeated here.[3]

TRIPS came into force in the United States through implementing legislation that conformed

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[3] *See, e.g.*, International Business Machines Corporation Amicus Br.

U.S. law to it. Uruguay Round Agreements Act (URAA), Pub. L. No. 103-465, 108 Stat. 4809 (1994). Congress amended Title 35 of the U.S. Code to bring it into conformity with the patent provisions of TRIPS. URAA §§ 531-534. Among the significant changes to U.S. law was the term of patents. *Id.* at § 532. Pointedly, Congress did not amend § 101 in order to bring it into compliance with Article 27(1). Indeed, not even a suggestion contemporaneous with the URAA that § 101 might be out of compliance with TRIPS has come to *amici's* attention. The compelling presumption is that Congress did not believe § 101 contained any such discrimination, particularly since the United States had for years complained that other countries discriminated against some technologies *in contrast to the U.S.* and this provision of TRIPS was an attempt to address that problem. *See* Devereaux, *supra.*[4] Furthermore, while TRIPS

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[4] In contrast to a lack of concern regarding § 101 compliance with TRIPS when the URAA was under consideration, compare Congressional and administration concerns regarding a later house bill (discussed in Section I.B., *infra*) that proposed merely limiting USPTO funds for some medical process patents:

> The House-passed Ganske amendment to limit the authority to expend funds to issue medical procedure patents undercuts the hard fought gains of the GATT Treaty TRIPS provisions (Trade-Related Intellectual Property Rights). The House language invites, however unintentionally, our trading partners to adopt intellectual property protections that comply with TRIPS but, at the same time, functionally nullifies these apparent gains by simply not appropriating administrative funds. If this technique were used by our

(Continued on following page)

permitted countries to specifically exclude from patent protection certain healthcare technologies,[5] Congress did not choose to enact any such limitations.[6] The Federal Circuit's MoT test, in addition to violating TRIPS, ignores Congress's specific decisions in its implementation.

If this Court adopts the Federal Circuit's MoT test, or another test that discriminates against any area of technology, the United States will be subject to trade disputes for violations of Article 27(1). Such disputes will be decided by the WTO, not this Court. TRIPS art. 64. This Court must consider carefully whether it should subject this country to international disputes that will be independently adjudicated. Interpretation of Article 27(1) will be "in

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foreign trading partners not to enforce American-owned patents on, for example, pharmaceuticals or automobile parts, Congress and the public would demand action. 142 Cong. Rec. S11,844 (daily ed. Sept. 30, 1996).

[5] Article 27(2)-(3) permits member states to "exclude from patentability" certain inventions, including "diagnostics, therapeutic and surgical methods for the treatment of humans or animals." Importantly, Congress has never availed itself of these exceptions and in fact has rejected such approaches. *See* Section I.B., *infra*; fn. 6, *infra*.

[6] In connection with the Ganske bill debates, discussed below, Senator Hatch placed into the Congressional Record a letter from the United States Trade Representative (USTR) voicing concern over the trade implications of the pending bill, premised on the basis that the United States had not exercised its right to exclude from patentability the inventions listed in Article 27(2)-(3). 142 Cong. Rec. S11,844 (daily ed. Sept. 30, 1996).

accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose. . . ." Vienna Convention on the Law of Treaties art. 31(1), May 23, 1969, 1155 U.N.T.S. 331.[7] It does not seem reasonable to expect the "context" of Article 27(1)'s meaning to include this Court's precedent or other U.S. patent practices from the 19th to mid-20th centuries.

Clearly the "context" of Article 27(1) includes its genesis in the U.S. agenda to broadly expand patent protection around the world for U.S. industries like software and healthcare. Devereaux *et al.*, *supra.* Prior to TRIPS, the U.S. had negotiated the North American Free Trade Agreement,[8] with a patent provision essentially identical to TRIPS' Article 27(1). NAFTA, art. 1709. Well before the TRIPS agreement, Congress pursued a bilateral policy of trade sanctions when countries did not provide patent protection for subject matter key to the U.S. healthcare industry. The Omnibus Trade and Competitiveness Act of 1988, Pub. L. No. 100-148, 102 Stat. 1107 (1988), contained the "Special 301" program of retaliation against countries that deny adequate intellectual property protection for U.S. industries. *Id.* at § 1303. This legislation was credited with advancing the United States agenda for strengthened patent protection, for example, by extracting a commitment from Brazil to provide patent protection for U.S. healthcare technology. Devereaux, *supra* at 62. Special 301 is still an important aspect of U.S. foreign policy, and countries which fail to provide adequate patent protection for U.S. healthcare companies are being investigated.[9]

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[7] *See generally* Naigen Zhang, *Treaty Interpretation of the WTO Dispute Settlement*, 4 U.S.-China L. Rev. 22, 23 (2007) (noting that, since 1996, WTO has adopted Art. 31 of Vienna Convention as the customary rule of interpretation "without exception").

[8] U.S.-Can.-Mex., Dec. 17, 1992, 32 I.L.M. 289 (1993) (hereinafter "NAFTA").

Thus, if a trade dispute is brought to the WTO based upon the MoT test, there is substantial basis or "context" for that body to find the test violates Article 27(1). Furthermore, the MoT test will seriously undermine U.S. trade policy. The U.S. will no longer be able to credibly argue in Special 301 trade disputes that failure to protect healthcare inventions made by cutting-edge U.S. companies constitutes inadequate protection of intellectual property rights.

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[9] The USTR's most recent report demonstrates the role Special 301 investigations play in U.S. trade relations. *See, e.g.*, Office of the U.S. Trade Representative, *2009 Special 301 Report* 2 (2009), *available at* http://www.ustr.gov/about-us/press-office/reports-and-publications/2009/2009-special-301-report.

B. The History of the Ganske Bill and 35 U.S.C. § 287(c) Shows That Congress Intends § 101 to Be Broadly Construed and Favors Targeted, Non-§ 101 Solutions for Problematic Patents.

In 1995, Congressman Ganske, a physician, and Congressman Wyden introduced H.R. 1127 entitled the *Medical Procedures Innovation and Affordability Act*, H.R. 1127, 104th Cong. (1st Sess. 1995), *available at* http://bulk.resource.org/gpo.gov/bills/104/h1127ih.txt.pdf, to eliminate certain healthcare technology from patentable subject matter. The bill provided:

> LIMITATION ON ISSUANCE OF PATENTS. On or after the date of the enactment of this Act, a patent may not be issued for any invention or discovery of a technique, method, or process for performing a surgical or medical procedure, administering a surgical or medical therapy, or making a medical diagnosis, except that if the technique, method, or process is performed by or as a necessary component of a machine, manufacture, or composition of matter or improvement thereof which is itself patentable subject matter, the patent on such machine, manufacturer, or composition of matter may claim such technique, method or process.

The genesis of this bill was a patent granted to a physician for a method of cataract surgery, which the physician then attempted to enforce (unsuccessfully) against another physician. *See generally* Gerald J. Mossinghoff, *Remedies Under Patents on Medical and*

Surgical Procedures, 78 J. Pat. Tm. Office Soc'y 789 (1996).

Substantial opposition to the bill was raised by the pharmaceutical and biotechnology industries, *id.* at n.11, as well as members of Congress. *Id.* at n.20. An important principle raised by the opponents was that the broad sweep of patentable subject matter embraced by § 101 was a key feature in the success of the U.S. patent system, particularly in healthcare. 142 Cong. Rec. S11,844 (daily ed. Sept. 30, 1996). After lengthy negotiations involving members of Congress, the American Medical Association, the Pharmaceutical Manufacturers Association, and the Biotechnology Industry Organization, the approach of limiting patentable subject matter was rejected and a compromise was reached to eliminate remedies against physicians for infringement of patents. Mossinghoff, *supra*, at nn.16-18. The resulting compromise was enacted as 35 U.S.C. § 287(c).

The history of the Ganske bill demonstrates that Congress intends § 101 to broadly encompass medical innovations. In particular, subject matter limitations on claims to a "surgical or medical procedure, administering a surgical or medical therapy, or making a medical diagnosis" were rejected. Significantly, even though the original Ganske bill did not place limitations on such inventions when the process was "performed by or as a necessary component of a machine, manufacture, or composition of matter," even this more limited restriction on patentable subject matter was rejected by Congress. The rejected

Ganske bill's proposed limitation on patentability is remarkably similar in approach to the Federal Circuit's MoT test.

Congress wisely noted that the risk of limiting patentable subject matter in the fields of medical technology was fraught with danger because its impact would be unforeseeable and place at risk industries vital to the health of Americans and to the country's competitiveness. 142 Cong. Rec. S11,844 (daily ed. Sept. 30, 1996). This case illustrates well Congress's fears. In an effort to fashion industrial policy and eliminate business method patents, the Federal Circuit has caused unintended consequences – certainly consequences unintended by Congress. It does not matter that the MoT test is set forth in a technology-neutral manner. It clearly restricts patentable subject matter in fields of medical technology, impermissibly overruling Congress's statutory scheme, as illustrated by the history of § 287(c). This Court must not make the same mistake.

C. The Complex Interplay of U.S. Treaty Obligations, Congressional Pro-Patent Policy, and the Underlying Issue of What Constitutes Sound Industrial Policy Illustrates Why the Courts Should Not Intervene in a Problem That Can Only Be Effectively Addressed by the Political Branches of Government.

This Court is being asked by some to make a fundamental decision about industrial policy. Based on the record of an *ex parte* patent prosecution (where the USPTO elected not to examine the claims on the other requirements of patentability[10]) and page-limited briefs, it is being asked to decide whether some technological method patents constitute good policy and fashion a solution that eliminates those patents it judges to be detrimental. At the same time, this Court should adequately protect valuable U.S. industries whose livelihoods depend on patent protection. Furthermore, any solution this Court crafts must avoid running afoul of U.S. treaty obligations and decades of U.S. foreign policy. Even if this were the proper role of the courts, the prospects of an optimal solution on the available record are not high.

The difficulty of making an informed decision in this area is illustrated by the dissenting opinion in the *Lab. Corp.* case. Relying on what it thought was a full record, *Laboratory Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124 (2006) (Breyer, J., joined by Stevens and Souter, JJ., dissenting from dismissal of writ of certiorari), the dissent expressed a concern that appeared to underlie its position on limiting § 101 for a diagnostic method:

> [S]pecial public interest considerations reinforce my view that we should decide this case. To fail to do so threatens to leave the medical profession subject to the restrictions

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[10] There is substantial reason to doubt the patentability of Bilski's claims under 35 U.S.C. §§ 102, 103 & 112. *See* fn. 21, *infra*.

> imposed by this individual patent and others of its kind. Those restrictions may inhibit doctors from using their best medical judgment; they may force doctors to spend unnecessary time and energy to enter into license agreements; they may divert resources from the medical task of healthcare to the legal task of searching patent files for similar simple correlations; they may raise the cost of health care while inhibiting its effective delivery. *Id.* at 138.

In the relatively unconstrained fact gathering of the legislative process, it would have been called out that this exact concern was addressed by Congress when the Ganske bill was introduced, as discussed above. Congress rejected a subject matter solution in favor of a different solution. Congress provided 35 U.S.C. § 287(c) to exempt a physician from any suit whatsoever for patent infringement in the situation highlighted by the *Lab. Corp.* dissent.[11] Thus the dissent's concerns were unfounded.

The cited authority for this alleged threat to doctors was not a brief submitted by a physician's organization, but a brief from a trade association for test providers. 548 U.S. at 138.[12] This Court needs to remain cautious in taking at face value the representations of parties who want to reduce royalties paid to innovators. Congress is much better equipped to evaluate the merits of competing private and public concerns.

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[11] Diagnosing and treating a vitamin deficiency is the type of medical procedure performed on the body exempted from all infringement remedies under § 287(c)(1) & (2). If this exemption does not satisfy the concerns of the dissent, it still remains a matter for Congress.

Before this Court endorses a § 101 test that threatens the viability of entire fields of critical medical research, it needs to pause and ask whether it is in a position to avoid throwing the baby out with the bath water. In *Diamond v. Chakrabarty*, this Court wisely stated:

> The choice we are urged to make is a matter of high policy for resolution within the legislative process after the kind of investigation, examination, and study that legislative bodies can provide and courts cannot. 447 U.S. 303, 317 (1980).

This Court should follow its own wise counsel and resist any attempt to interpret the statute in a manner that invades Congress's role and long-held policy of broad patentable subject matter. Any subject matter limitation beyond that proposed below will be based upon incomplete information and likely have significant, adverse unintended consequences to vital domestic industries. Only Congress is capable of competently addressing this issue.

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[12] *See also In re Bilski*, 545 F.3d 943, 1013-14 (2008) (Rader, J., dissenting and pointing out the incorrect premise of the *Lab Corp.* dissent with respect to the actual patent claim at issue).

D. Bilski's Claims Are Unpatentable Under § 101 Because the Only Subject Matter Restriction Open to This Court That Does Not Contravene U.S. Treaty Obligations, Foreign Policy, and Congressional Intent Is to Limit Process Claims Coverage to Technological Processes, and Bilski's Claims Are to a Non-Technological Business Method.

There is only one approach open to this Court to find Bilski's claim unpatentable under § 101 and not contravene Congress's historical policy of broad subject matter eligibility for patents, or U.S. treaty obligations. Since the U.S. cannot withhold patent protection for any technological process, the only test available is whether or not a process is "technological." Such a test would meet the Respondent's concerns by excluding methods solely directed to organizing human activity, yet still embrace technological methods outside the rigid MoT test.

It is clear from Congressional action in the implementation of the TRIPS agreement that Congress did not consider § 101 too narrow to comply with the technology non-discrimination provision of TRIPS. That does not preclude the scope of patentable subject matter under § 101 being broader than the minimum required by TRIPS. This Court could inquire, however, whether the Constitution permits Congress to enact a patent statute that provides patent protection for non-technological inventions.

Article I, section 8, of the U.S. Constitution provides that Congress has the power "[t]o promote the Progress of Science and the useful Arts. . . ." This Court, as it did when it found that patents must meet a Constitutional threshold of invention,[13] has recognized that there are limits to Congressional authority to authorize patents. For essentially the same reasons that the Constitution prohibits patents on inventions that are merely novel and not "inventive," patents on non-technological processes arguably have no role in promoting the useful arts. For any practical purpose, the minimum patent protection required by TRIPS and the maximum allowed by the Constitution potentially coincide.

Bilski's claim is not related in any way to the useful arts or technology.[14] It is purely a financial

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[13] The history of the Constitutionally imposed requirement of "invention" for patentability found by this Court, and its subsequent codification in the Patent Act of 1952 at 35 U.S.C. § 103, can be found in *Graham v. John Deere Co.*, 383 U.S. 1, 5-19 (1966).

[14] It is widely accepted that "Science" in Article I, section 8, refers to knowledge generally and that this relates copyrights, while "useful Arts" refers to the right to grant patents. *See, e.g., In re Bergy*, 56 F.2d 952, 958 (C.C.P.A. 1979).

It is also believed that in 1787 the phrase "'useful arts' meant basically helpful or valuable trades." Edward C. Walterscheid, *Nature of the Intellectual Property Clause: A Study in Historical*

(Continued on following page)

method, independent of the application of any scientific or technological principle. Thus, Bilski's claim could be held to fall outside the permissible Constitutional scope of § 101 because it is drawn to a non-technological process. It is argued by some that economics is now a field of technology. *See, e.g.*, Regulatory DataCorp Amicus Br. 29-33. Perhaps that is true. A § 101 analysis should focus on the claimed subject matter, however, not an arbitrary labeling of its field. Bilski's method of negotiating a series of contracts with certain financial parameters is independent of any technology. It may be labeled a "business method," but the determinative fact is that the method does not apply any technological innovation.

II. The Federal Circuit's MoT Test Threatens the Public Health, National Security, and Federal Deficit Reform, While Proponents of the MoT Test Have Failed to Demonstrate That It Is Targeted to Documented Problems and Will Not Eliminate the Incentive to Invest in Critical Medical Technology.

Proponents of using § 101 as the vehicle for solving alleged problems of the patent system need to demonstrate that the limitation they propose does not

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Perspective 126 (2002), and that this would be equivalent to the term "technology" today. *Id.* at 1, n.1.

restrict patentable subject matter in areas where the patent system serves the national interest, such as the healthcare industry. Some of the most promising advances in medicine are made possible through investment in newly available data collection and analysis tools that permit the recognition of hidden, multivariate empirical relationships in otherwise overwhelmingly complex biological systems.[15] Developing these techniques is expensive and risky, and important resulting inventions may not involve a transformation of articles or specialized machines. Congress certainly intended § 101 to embrace such important innovations and promote investments that improve the health and security of the American people.

The Respondent has given the MoT test's threat to healthcare short shrift. It argues "[n]o *extant* field of technology *or industry* . . . is *wholly* excluded" by the MoT test. Resp. Br. 36 (emphasis added). First, TRIPS's prohibition of discrimination against any technology is not met merely because some technology in an industry is patentable. Second, the focus on "extant" technology is exactly the myopic view of § 101 wisely eschewed by Congress. Third, and perhaps most importantly, the market segmentation in healthcare (discussed below) may make it impossible for important healthcare technology to be protected if machine or transformation steps are required to be in claims. Finally, the Respondent contradicts itself by arguing on the one hand that this case is an inappropriate vehicle for the concerns of the software or healthcare industries because it involves business method inventions, *id.* at 37-40, and on the other that this Court should adopt a broadly applicable § 101 test. *Id.* at 43-44.

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[15] Biotechnology Industry Organization Amicus Br. 14-27.

A. *Amicus* Tethys Develops Technology That Can Dramatically Improve Millions of Lives Threatened by Diabetes and Make a Substantial Contribution to Reining in Healthcare Costs and the Federal Deficit. But Rather Than Promoting Such Advances, the Federal Circuit's MoT Test Threatens Its Ability to Fund Development of Its Technology.

Slowing growth of healthcare costs is necessary to prevent "disastrous increases in the Federal budget deficit." Council of Economic Advisers, *The Economic Case For Health Care Reform* 1 (2009), *available at* http://www.whitehouse.gov/assets/documents/CEA_Health_Care_Report.pdf. One out of every five healthcare dollars is spent caring for diabetes patients. American Diabetes Ass'n, *Direct and Indirect Costs of Diabetes in the United States* (2009), *available at* http://www.diabetes.org/diabetes-statistics/cost-of-diabetes-in-us.jsp. Approximately 24 million Americans have diabetes (about 5.7 million undiagnosed) and by 2050 it is estimated that the number of diabetics will double. Centers for Disease Control, *Preventing Chronic Diseases: Investing Wisely in Health – Preventing Diabetes and Its Complications* (2008), *available at* http://www.cdc.gov/NCCDPHP/publications/factsheets/Prevention/pdf/diabetes.pdf. Diabetes is a leading cause of kidney failure, blindness, and leg and foot amputations, and a major cause of heart disease and stroke. *Id.* It is not surprising that healthcare leaders have stated that preventing diabetes is key to reducing patient suffering and the high cost of diabetes to society. Alan J. Garber *et al.*, *Diagnosis and Management of Prediabetes in the Continuum of Hyperglycemia – When Do the Risks of Diabetes Begin?,* 14 Endocrine Practice 933, 940 (2008), *available at* http://www.aace.com/meetings/consensus/hyperglycemia/hyperglycemia.pdf. A highly accurate diagnostic test that can identify those patients who will, absent targeted intervention, develop diabetes, would be an extremely important advance. *Id.* at 942.

Clinical studies have shown that lifestyle modification and drug intervention can prevent diabetes. Diabetes Prevention Program Research Group, *Reduction in the Incidence of Type 2 Diabetes with Lifestyle Intervention or Metformin*, 346 New England J. Med. 393 (2002). There are 57 million Americans who are identified as having "pre-diabetes." American Diabetes Ass'n, *Pre-Diabetes* (2009), *available at* http://www.diabetes.org/pre-diabetes.jsp. The tests used to diagnose pre-diabetes have only limited predictive value, because as few as 1 in 10 diagnosed pre-diabetics develop diabetes within five years.

Gregory A. Nichols *et al.*, *Progression From Newly Acquired Impaired Fasting Glucose to Type 2 Diabetes*, 30 Diabetes Care 228 (2007). If limited healthcare resources could be better focused on those pre-diabetics most likely to develop diabetes, there could be both a significant improvement in quality of life for millions of Americans, as well as a significant reduction in future healthcare expenditures.

Armed with over $70 million in venture capital, Tethys entered the highly competitive and risky field of diabetes research expecting that if it developed a valuable invention, its investors would have effective patent protection. Against the odds, Tethys developed a way to predict which pre-diabetics will develop diabetes within five years with a previously unknown level of accuracy. Among populations tested so far, patients identified with Tethys' technology as high risk are as much as 12 to 24 times more likely to develop diabetes over the next five years as those classified as low risk. Mickey Urdea *et al.*, *Validation of a Multimarker Model for Assessing Risk of Type 2 Diabetes from a Five-Year Prospective Study of 6,784 Danish People (Inter99)*, 3 J. Diabetes Sci. Technol. 748 (2009).

Tethys' invention has enabled for the first time, targeted, cost-effective intervention in those pre-diabetes cases most likely to actually become diabetic. Tethys' success should be a paradigm of the societal benefits of a properly functioning patent system. Instead, Tethys' future ability to receive a return on its high-risk investment and fund the improvement and extension of this technology to other diseases (*e.g.*, heart disease and osteoporosis) is at risk if the Federal Circuit's MoT test is adopted by this Court. The root of the problem is that key aspects of Tethys' innovative technology rely on recognizing the complex interrelationships of multiple "markers" in the blood to future risk of disease. This technology in significant part is independent of any specialized machine or transformation of an article.

B. *Amicus* Adamas Is at the Forefront of Improved Treatments for Influenza and Is Developing a Response to the Swine Flu Pandemic That Could Prevent the Emergence of Drug-Resistant Flu Strains, but the Federal Circuit's MoT Test Threatens Its Ability to Fund Future Development.

Pandemic flu is a threat to our national security and could kill more Americans than any bioterrorist attack. Bob Graham and Jim Talent, Commission for the Prevention of Weapons of Mass Destruction Proliferation and Terrorism, *Preparing for Pandemics, Natural and Manmade*, http://www.preventwmd.gov/6_11_09/ (June 11, 2009); Association of State and Territorial Health Officials, *Preparedness Planning for State Health Officials: Nature's Terrorist Attack – Pandemic Influenza* (2002). The swine flu virus threatening global health is a novel form of the H1N1 influenza A virus. U.S. Centers for Disease Control, *Novel H1N1 Flu (Swine Flu) and You* (2009), http://www.cdc.gov/h1n1flu/qa.htm. The swine flu pandemic has now reached 160 countries and it is projected to infect two billion people over the next two years. *Swine flu 'reaches 160 countries,'* BBC News, July 24, 2009, http://news.bbc.co.uk/2/hi/in_depth/8167961.stm. There are nearly 45,000 confirmed cases in the United States and over 300 deaths so far. U.S. Centers for Disease Control, *Novel H1N1 Flu Situation Update,* http://www.cdc.gov/h1n1flu/updates/072409.htm (July 24, 2009). Estimates of unconfirmed infections bring the number to over 1 million U.S. cases. *See, e.g.,* Timeline Update H1N1 2009 Swine Flu, http://www.medicinenet.com/swine_flu/page9.htm (2009). It is predicted that there will only be enough vaccine for a fraction of the population. Associated Press, *U.S.: 160M doses of swine flu vaccine due in Oct.* (July 22, 2009), *available at* http://www.newsday.com/us-160m-doses-of-swine-flu-vaccine-due-in-oct-1.1321315.

The seriousness of the situation cannot be overstated. The President's Council of Advisors on Science and Technology (PCAST) has delivered a baseline scenario for the upcoming flu season concluding that (1) 30-50% of the U.S. population could be infected; (2) there could be 1.8 million hospital admissions; and (3) there could be 30,000-90,000 deaths concentrated among young adults and children (up to three times the normal fatalities, which are concentrated among people over 65). PCAST, *Report to the President on U.S. Preparations for 2009-H1N1 Influenza* (Aug. 7, 2009), *available at* http://www.whitehouse.gov/assets/documents/PCAST_H1N1_report.pdf.

Because of the expected vaccine shortfall, drug therapy will be a critical component in meeting the swine flu pandemic. The Centers for Disease Control has deployed 25 percent of the anti-influenza drug supplies in the Strategic National Stockpile (SNS). *Id.* at n.39. Unfortunately, drug resistance is a major concern. It arises when large populations are treated with drugs under conventional protocols. *Drug Resistance In An Influenza Pandemic*, ScienceDaily, January 23, 2007, http://www.sciencedaily.com/releases/2007/01/070123093523.htm. There are only four FDA-approved anti-influenza drugs: zanamivir, amantadine, rimantadine, and oseltamivir. Zanamivir, needs to be administered by inhalation which limits its usefulness to treat the seriously ill due to the respiratory complications of severe influenza. *See* Zanamivir Index, *available at* http://www.medicinenet.com/zanamivir/article.htm. All strains of the swine flu tested to date are resistant to amantadine and rimantadine. U.S. Ctrs. for Disease Control, *Update: Drug Susceptibility of Swine-Origin Influenza A (H1N1) Viruses*, (Apr., 2009), http://www.cdc.gov/mmwr/preview/mmwrhtml/mm58d0428a1.htm. Some strains of swine flu have been found recently that are resistant to oseltamivir, which is the primary drug in the SNS arsenal. *CDC Health Alert Network (HAN) Info Service Message: Three Reports of Oseltamivir Resistant Novel Influenza A (H1N1) Viruses*, http://www.cdc.gov/h1n1flu/HAN/070909.htm. This is particularly alarming since over 99% of the most recent seasonal flu isolates (which are still in circulation) are also oseltamivir resistant. The amantadine/rimantadine-resistant Swine flu strain could recombine with the seasonal oseltamivir-resistant strain to produce a multi-drug resistant flu virus. Unfortunately, the widespread use of conventional drug therapy against the novel Swine flu strain could also rapidly lead to a multi-drug resistant virus. If that happens, the SNS would be completely ineffective. If there is no strategy for dealing with drug resistance, the swine flu pandemic could be devastating to the United States – and the world.

Adamas has made a technological breakthrough in treating severe influenza that not only clears infection faster, but prevents the generation of drug-resistant strains that normally arise when only a single (or even two) drugs are used to treat patients. Nguyen *et al.*, *Triple combination therapy is highly synergistic and effective in in vitro and in vivo models of influenza A infection*, Presentation at Infectious Disease Society of America Conference on Seasonal and Pandemic Influenza (May 18-20, 2008), abstract *available at* http://www.idsaglobalhealth.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=11384. Unexpectedly, it appears that the Adamas therapeutic approach may also *restore* sensitivity to a drug-resistant influenza virus. Steve Sternberg, *H1N1 trials to use drug cocktail,* USA Today, Sept. 13, 2009, *available at* http://www.usatoday.com/news/health/2009-09-13-swineflu_N.htm (experts "surprised" by invention). Maximizing

Adamas' breakthrough, which involves a novel approach to the use of existing drugs, will depend on how drugs are deployed to the frontlines of a pandemic. To continue the development of this promising technology, Adamas has entered into a collaboration with the U.S. Navy, and is also rapidly conducting necessary, but expensive, clinical trials. It recently raised $40 million in private funding to pursue these urgent goals. Yet, like Tethys, important aspects of Adamas technology are not limited to particular machines or the transformation of an article.

While the United States faces the most serious public health threat since the Spanish Flu, it would be reckless to undermine the patent system's encouragement of the healthcare industry's highest priority effort. Yet the Federal Circuit's MoT test does exactly that. This Court should unambiguously rule that all technological methods, and in particular healthcare, are patentable subject matter and avoid the serious mistake of foreclosing investment in healthcare technology not yet imagined.

The Federal Circuit cast a pall over the most innovative segments of medical research. The Respondent is simply incorrect to suggest that claims with a "transformation of blood" step are generally sufficient to impart patentability. Resp. Br. 40. A method requiring transformations of blood was found unpatentable in the Federal Circuit's first post-*Bilski* application of the MoT test. In *Classen Immunotherapies Inc. v. Biogen IDEC*, No. 2006-1634, 2008 WL 5273107 (Fed. Cir. Dec. 19, 2008) (unpublished), the Federal Circuit affirmed a summary judgment of invalidity under § 101. The claim at issue would, to any scientist, require a transformation of blood because an immunizing step requires the injection into a mammal of an "immunogen." Not only is the blood transformed by having a foreign body placed into it, the blood transforms further via an immune response, adding new B-cells, T-cells, and antibodies.[16] Yet the *Classen* opinion merely concluded: "Dr. Classen's claims are neither 'tied to a particular machine or apparatus' nor do they 'transform[ ] a particular article into a different state or thing.'" *Classen*, 2008 WL 5273107 at *1. If the MoT test blocks inventions like the one in *Classen*, the ability to raise capital for valuable, high-risk, cutting edge biomedical research will be severely undercut.

The MoT test permits "insignificant postsolution activity" claim limitations to be ignored. *In re Bilski*, 545 F.3d 943, 957 & nn.14, 26-27 (Fed. Cir. 2008). This is an arbitrary and subjective standard provided without guidance. It allows a court to ignore the reasons a claim otherwise meets the MoT test. Of great concern is that the Federal Circuit cited with approval its decision in *In re Grams*, 888 F.2d 835 (Fed. Cir. 1989), reasoning it could ignore the requirement to perform a clinical diagnostic test in a diagnostic claim because it was insignificant extra-solution activity. *Id.* In the context of a diagnostic method, how could it ever be concluded that collecting and testing a sample is an insignificant step?

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[16] For an explanation of the immune response to an immunogen, *see* http://www.globalhealth.org/bios/bio_3/#vaccines.

The Federal Circuit's most recent post-*Bilski* § 101 decision, *Prometheus Lab., Inc. v. Mayo Collaborative Services*, ___ F.3d ___, App. No. 2008-1403 (Fed. Cir., filed Sept. 17, 2009), found that a claim limitation for "determining" the levels of an analyte satisfied the MoT test because some form of manipulation was required. *Id.* at 16-17. The court further held that the determining step was "integral" to the claimed method and distinguished the clinical testing step in *Grams* because it "did not require the performing of clinical tests on individuals that were transformative . . . ," *id.* at 18-19, a fact not found in *Grams*. The invention at issue in *Prometheus* is close to that claimed in *Classen*, but the outcome was the opposite. While it is encouraging that *Prometheus* is a precedential decision and *Classen* is not, the unpredictability of the MoT test's application will discourage investment in valuable medical research.

Even if a predictable view of the MoT test is adopted by this Court, medical research companies will remain at risk. Typically process claims are drafted to contain the minimum steps needed to define the technological contribution. The MoT test, however, could force the inclusions of "integral" transformation steps that are not needed to define the technological advance. Because of market segmentation in healthcare, one commercial entity could perform the transformation step of a patented method, while another commercial entity carries out the non-transformative steps.[17] In order for a claim to be infringed, one entity and/or its agents must practice all the steps of the claim. *BMC Resources, Inc. v. Paymentech, L.P.*, 498 F.3d 1373 (Fed. Cir. 2007) (allowing parties practicing different steps of process claim to avoid joint infringement liability by arms-length relationship). By requiring claims to include unnecessary transformation steps, there may not be any effective patent protection from competitors who cleverly structure their business. Thus, even though high-risk investment leads to an important advance in a field of technology that Congress intended to be covered by § 101, the MoT test can defeat the patent incentive.

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[17] An existing test exemplifies the risk from requiring "extra" claim limitations in a segmented market. Berkeley HeartLab, Inc. is an innovator in heart disease diagnostics. It offers a testing service that analyzes markers of potential heart disease from a blood sample and provides physicians with the tools needed to create personalized treatment plans for each patient. *See, e.g.*, Berkeley HeartLab Clinicians, http://www.bhlinc.com/clinicians.php. The blood sample collection could be done at essentially any independent reference laboratory and then sent to a competitor who performs the same marker analysis. If Berkeley HeartLab was required to have the sample collection step in their claims for § 101 purposes, the competitor would not have infringed the claims, yet it would have appropriated the technological advance underlying Berkeley HeartLab's invention.

III. The Court Should Use This Opportunity to Correct Decades of Ill-Conceived Dissection of § 101 and Let the Patent Statute as a Whole Operate to Limit Patentability.

A. This Court Has Held That Laws of Nature, Natural Phenomena, Abstract Ideas, and Algorithms Are Excluded From § 101, Which Is Consistent With Congressional Intent and U.S. Treaty Obligations, Because These Are Not Technological Processes.

This Court has held that a claim is not a patent-eligible "process" if it claims algorithms, laws of nature, natural phenomena, or abstract ideas. *Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972); *Diamond v. Diehr*, 450 U.S. 175, 185 (1981). Stated another way, and consistent with Congressional intent and U.S. treaty obligations, these scientific and mathematical principles are not, *if claimed as such*, processes and thus not a recognized category under § 101. Pursuant to TRIPS, patents cannot be withheld for any area of technology. A technological process is by definition a practical application of scientific principle and thus patentable. On the other hand, the principles themselves cannot be patented and others are free to invent new practical applications thereof.

Under this restated § 101 test, the holding in *Diehr* was correct because a method of curing rubber does not become patent ineligible merely because it employed a scientific principle (an empirical relationship between curing and temperature) to calculate the curing time of rubber. The invention there was clearly a technological process, and as such must apply scientific principles.[18]

B. Attempts to Further Parse Process Claims Into Patent-Worthy and Unworthy Categories Has Led to a Confused and Contradictory Body of Law Making Some Process Claims Unpatentable by Ignoring Claim Limitations Arbitrarily Characterized as "Insignificant Post-Solution Activity," "Mere Field of Use" Limitations, or Insufficient to Avoid "Preemption" of a Fundamental Principle.

Statements from this Court that claim limitations restricting a patent to a technological process can be ignored and the invention deemed to be ineligible subject matter have painted the test for patentable subject matter into an arbitrary and unpredictable corner. Take for example the statement of the *Diehr* Court that "insignificant post-solution activity will not transform an unpatentable principle into a patentable process." 450 U.S. at 191-92. Neither this Court nor the Federal Circuit has articulated an objective test as to what constitutes "insignificant" activity. This has permitted the USPTO and the Federal Circuit to arbitrarily throw out claim limitations and thwart an applicant's attempt to limit its invention to a technological process.

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[18] The dissent in *Lab. Corp. of Am. Holding v. Metabolite Labs., Inc.* stated "After all, many a patentable invention rests upon its inventor's knowledge of natural phenomena; many 'process' patents seek to make abstract intellectual concepts workably concrete. . . ." 548 U.S. 124, 134 (2006). It should be beyond debate that *all* inventions, not just "many," must inherently be based on the laws of nature. *Cf. Diehr,* 450 U.S. at 198 n.12 ("To accept the analysis proffered by the petitioner would, if carried to its extreme, make all inventions unpatentable because all inventions can be reduced to underlying principles of nature. . . .").

The above statement in *Diehr* relied upon a statement in *Parker v. Flook*, 437 U.S. 584 (1978): "The notion that post-solution activity, no matter how conventional or obvious in itself, can transform an unpatentable principle into a patentable process exalts form over substance." *Id.* at 590. Without explanation, the statement premises the objection to patentability on a suggestion that obvious claim limitations can somehow impart patentability. Yet obvious claims are unpatentable under 35 U.S.C. § 103.

The Court in *Flook* offered additional problematic dictum:

> A competent draftsman could attach some form of post-solution activity to almost any mathematical formula; the Pythagorean theorem would not have been patentable, or partially patentable, because a patent application contained a final step indicating that the formula, when solved, could be usefully applied to existing surveying techniques. 437 U.S. at 590.

Rather than approach the hypothetical invention for what it is, a method of surveying (*i.e.*, a technological process), the Court arbitrarily characterized the invention as an attempt to patent the Pythagorean theorem. There is, however, no reasoned difference between *Diehr*'s patentable rubber curing process employing a mathematical relationship between temperature and curing, and a method of surveying using a mathematical theorem. Apparently there was a subjective determination that the Pythagorean theorem was a more "fundamental" principle than a rubber-curing algorithm. The vast grey area between these examples does not clarify § 101. Decisions like *Flook* have made it opaque and unpredictable. If for some reason the processes of curing rubber and surveying are deserving of different patent treatment, it should be for Congress to decide, not the courts.

No analytical framework has been provided to objectively identify when a claim's limitations to a technological process can be ignored in the context of a § 101 analysis.[19] In reality, there is no sound reason to ignore *any* claim limitation and the need to do so merely confirms that the problem with the claimed invention, if there is one, is not related to subject matter. Changing what in fact is claimed for purposes of § 101 analysis is tantamount to an appellate court changing the facts of a case to justify its holding.

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[19] Similarly problematic is the *Diehr* Court's statement that mere field-of-use limitations are insufficient to render an otherwise ineligible process claim patent-eligible. *See* 450 U.S. at 191-92 (noting ineligibility under § 101 "cannot be circumvented by attempting to limit the use of the formula to a particular technological environment"). Like the "insignificant post-solution activity" exception, this Court has not provided an objective framework to determine when a field of use limitation can be ignored.

This Court's statements that claims are unpatentable if they preempt all practical applications of an algorithm or fundamental principle[20] are also highly problematic and incapable of consistent application. In chemical engineering, for example, substantial research can lead to the discovery of an empirical relationship between the shape of a pipe and the energy a pump needs to push liquid through it. The algorithm describing this relationship may have other applications, but it is unlikely that a team of researchers focused on solving a particular problem will have diverted resources to discovering applications in another field. Perhaps there is no practical application of the algorithm outside the focused patent claims. In either case, the inventors will be unable to rebut a "preemption" rejection. Thus, the preemption test penalizes those whose invention employs a new algorithm, even when the claims are limited to the practical application that was invented.

It is critically important that this Court recognize that § 101 is neither the only, nor the most appropriate statutory basis for limiting patents containing overly broad claims. Congress provided three other sections of the Patent Act to limit overly broad claims: 35 U.S.C. §§ 102 and 103 to deal with claims so broad as to encompass the prior art; and § 112 for claims so broad they fail the enablement, written description, or definiteness requirements. Section 101 is ill-suited to police such issues.

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[20] *See, e.g., Diamond v. Diehr* at 185; *Gottschalk v. Benson* at 72.

Consider the Court's characterization of the patent application and broad claim at issue in *Flook*:

> The patent application does not purport to explain how to select the appropriate margin of safety, the weighting factor, or any of the other variables. Nor does it purport to contain any disclosure relating to the chemical processes at work, the monitoring of process variables, or the means of setting off an alarm or adjusting an alarm system. All that it provides is a formula for computing an updated alarm limit. Although the computations can be made by pencil and paper calculations, the abstract of disclosure makes it clear that the formula is primarily useful for computerized calculations producing automatic adjustments in alarm settings.
>
> The patent claims cover any use of respondent's formula for updating the value of an alarm limit on any process variable involved in a process comprising the catalytic chemical conversion of hydrocarbons. Since there are numerous processes of that kind in the petrochemical and oil-refining industries,

> the claims cover a broad range of potential uses of the method. 437 U.S. at 586 (footnotes omitted).

The *Flook* majority could not have stated a better unpatentability rejection for failing to comply with the enablement requirement of § 112. Both the *Flook* (unpatentable) and *Diehr* (patentable) claims were directed to technological processes (control of a chemical process), the only objective distinction being claim breadth. There is no reason that a correct application of § 112 would not have reached the same result and avoided the confusion that has arisen over § 101.

As discussed above, the Federal Circuit's application of the MoT test, both after *Bilski* and to its prior decisions retrospectively, demonstrates the legacy of unpredictability that has arisen from importing concepts of overbreadth into the analytical framework for subject matter. All the claims at issue in *Grams*, *Classen*, and *Prometheus* were drawn to medical or diagnostic methods, long generally recognized as statutory subject matter. They are technological processes. That is their subject matter. The only objection to some of the claims was in fact overbreadth, which should be dealt with under § 112. There is no sound policy reason to foreclose important areas of technological innovation from patentability when sections 102, 103, and 112 can police overly broad claims.[21] Finding claims unpatentable under these provisions is clearly permissible under TRIPS Article 27(1)[22] and avoids the risk of subjecting the U.S. to trade disputes for discriminating against some technological processes.

The only consistent, predictable, and fair test for patentable subject matter is to look at each claim as a whole without excluding any limitation. If a claim is limited to a technological process having utility, such as a diagnostic process or a response to a pandemic, the § 101 inquiry can stop there. If a company has invested significant capital into research and invented a technological process that is novel (§ 102) and not obvious from the prior art (§ 103), and prepared a patent application that describes and enables the practice of the invention across the scope of the claim and the claim is sufficiently definite (§ 112), what policy end is served by barring the chance for a patent under § 101 and drastically reducing future investment in that field? This Court has the opportunity to close the chapter on unworkable, subjective distinctions among inventions that appear nowhere in § 101. *Amici* urge that prior decisions underlying these arbitrary and unworkable § 101 standards be distinguished or overruled.

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[21] Bilski's claims are also likely unpatentable under §§ 102, 103 and/or 112. With respect to novelty and obviousness, for example, the method appears to read upon a grain broker who enters into conventional futures contracts with farmers and supply contracts with its customers; all market-based prices have been "based" in some way upon "historical averages" once the market existed. Enablement across the scope of the claim is also highly suspect because it does not appear possible to enable the person of ordinary skill to negotiate the necessary agreements in all market conditions. Finally, the claim appears hopelessly indefinite since whether "transactions balance the risk position" is inherently subjective. The Bilski patent application is not an example of an invention that "but for" a limitation on § 101, an undesirable patent will result.

[22] Article 27(1) only requires patent protection for technological inventions "provided they are new, involve an inventive step and are capable of industrial application."

CONCLUSION

This Court should hold that the only proper limitation on process claims under § 101 is the exclusion of non-technological processes. Bilski's claims are not valid under § 101 because they are drawn to a non-technological process. Most importantly, this Court should reject the MoT test fashioned by the Federal Circuit and preserve the patentability of cutting edge medical research. Nuanced industrial policy should be left to Congress.

October 2, 2009

Respectfully submitted,

ROBERT P. BLACKBURN
2930 Domingo Ave. #209
Berkeley, California
94705
(510) 898-5000

KAREN I. BOYD
Counsel of Record
TURNER BOYD LLP
2625 Middlefield Rd. #675
Palo Alto, California
94306
(650) 533-7572

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IN THE

Supreme Court of the United States

BERNARD L. BILSKI & RAND A. WARSAW,
Petitioners,
v.
DAVID J. KAPPOS,
UNDER SECRETARY OF COMMERCE
FOR INTELLECTUAL PROPERTY AND
DIRECTOR, PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari to the
United States Court of Appeals
for the Federal Circuit

BRIEF OF AMERICAN BAR ASSOCIATION AS *AMICUS CURIAE* IN SUPPORT OF RESPONDENT

Of Counsel:
Thomas C. Goldstein
Michael L. Kiklis

CAROLYN B. LAMM
Counsel of Record
PRESIDENT
AMERICAN BAR
ASSOCIATION
321 North Clark Street
Chicago, IL 60654-7598
(312) 988-5000

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QUESTIONS PRESENTED

A) Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

B) Whether the Federal Circuit's "machine-or-transformation" test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273.

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INTEREST OF THE *AMICUS CURIAE*[1]

Pursuant to Supreme Court Rule 37.3, the American Bar Association ("ABA"), as *amicus curiae*, respectfully submits this brief in support of respondent. The ABA urges the Court to affirm the judgment of the Federal Circuit but to apply a different legal standard. Specifically, the ABA urges the Court to conclude that Claim 1 of the patent in suit falls within the Court's long-standing precedent, pursuant to which "abstract ideas," including mental processes, do not constitute patent-eligible subject matter under 35 U.S.C. § 101.

The ABA is the largest voluntary professional membership organization and the leading organization of legal professionals in the United States. Its nearly 400,000 members span all 50 states and other jurisdictions, and include attorneys in private law firms, corporations, non-profit organizations, government agencies, and prosecutor and public defender offices, as well as judges, legislators, law professors, and law students.[2]

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[1] Pursuant to Rule 37.6, *amicus curiae* certifies that no counsel for a party authored this brief in whole or in part and that no person or entity, other than *amicus*, its members, or its counsel, has made a monetary contribution to the preparation or submission of this brief. The parties have consented to the filing of this brief.

[2] Neither this brief nor the decision to file it should be interpreted to reflect the views of any judicial member of the American Bar Association. No inference should be drawn that any member of the Judicial Division Council has participated in the adoption or endorsement of the positions in this brief. This brief was not circulated to any member of the Judicial Division Council prior to filing.

The ABA's Section of Intellectual Property Law ("IPL Section") is the world's largest organization of intellectual property professionals, with over 25,000 members. The IPL Section is composed of lawyers of diverse backgrounds who represent patent owners, accused infringers, individual inventors, large and small corporations, and universities and research institutions across a wide range of technologies and industries.

Other Sections of the ABA have a considerable interest in the proper disposition of the questions presented by this case – in particular, the Section of Taxation, the Section on Real Property, Trust & Estate Law, and the Section of Science and Technology Law – and as a consequence played a material role in the formulation and adoption of the ABA policy reflected in this brief.

When this Court granted the petition for certiorari, the ABA instituted a process for developing, articulating, and adopting a consensus position of the diverse members of the legal profession regarding the proper disposition of this case. After extensive discussion and refinement, the result was a proposed recommendation for consideration by the ABA's House of Delegates at the ABA's 2009 Annual Meeting. The proposed recommendation was approved by the ABA's House of Delegates as ABA policy. This policy is set out in full in the Appendix.[3]

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[3] This ABA Policy, with its accompanying Report, is also available at http://www.abanet.org/leadership/2009/annual/daily_journal/Three_Hundred_Two.doc. The ABA's House of Delegates ("HOD"), with more than 500 delegates, is the ABA's

The extensive process undertaken reflects the ABA's determination to identify the consensus view of legal professionals on the proper resolution of the important questions presented by this case. The resulting ABA policy presents a methodology that allows for a measured, balanced approach to the determination of patent-eligible subject matter for business method patents in particular.

SUMMARY OF ARGUMENT

The ABA submits that this Court, consistent with its prior precedents, should decide this case incrementally by holding that petitioners' patent claim does not define a "process" under 35 U.S.C. § 101 because Section 101 does not authorize the issuance of patents on "abstract ideas." *E.g.*, *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980). The Court should apply its approach of exclusion and conclude that petitioners' claim is a type of claim that is *not* encompassed by the statute. Petitioners' claim is not patent-eligible because it recites nothing more than an abstract idea: a mental process that is central, not ancillary, to the claim.

This case does not require this Court to make broad pronouncements of new legal principles regarding the scope of permissible "business method patents." Moreover, this Court's ruling has the

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policymaking body. *See* ABA General Information, *available at* http://www.abanet.org/leadership/delegates.html. Recommendations that are adopted by the HOD become ABA policy, while reports that accompany recommendations are only instructive as to considerations that were before the HOD when a recommendation was presented for adoption as policy.

potential to significantly narrow the scope of patentable inventions, including with respect to fields that are now only barely known or that are in fact entirely undiscovered. These factors, in the ABA's view, counsel in favor of incremental decision-making that does not inadvertently pre-empt the patentability of later fields of invention.

The Federal Circuit did not follow this Court's precedents, which seek to identify what is excluded from patentability under Section 101. Rather, the court of appeals announced a fixed and specific definition, applicable across all categories of inventions, which risks excluding those yet-to-be discovered technologies that are deserving of patent protection. Accordingly, the Federal Circuit's rigid "machine-or-transformation test" should be rejected.

ARGUMENT

I. The Court Should Continue To Construe Section 101 Incrementally, By Excluding Certain Claims To Subject Matter As Non-Patentable, Rather Than Adopting A Categorical Rule That May Inadvertently Inhibit Innovation.

This case presents the question of what constitutes a patent-eligible "process" claim. 35 U.S.C. § 101 states that "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor[e], subject to the conditions and requirements of this title." A process, in turn, is defined as a "process, art, or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material." 35 U.S.C. § 100(b).

A finding that a claim recites patent-eligible subject matter – here, that it is a "process" within the meaning of Section 101 – does not mean that the invention is *ipso facto* patentable. Section 101 raises only a threshold inquiry: to be patentable, inventions must also satisfy the other requirements of title 35, including novelty, 35 U.S.C § 102, and non-obviousness, 35 U.S.C. § 103.

Section 101 jurisprudence, accordingly, need not seek to eliminate all objectionable patent claims. Rather, that provision determines whether a claim to an invention is outside the field of patent-eligible subject matter, so that the claim is not patentable *even if* it is novel and non-obvious.

This Court's recent practice has been to enhance, rather than restrict, the power of the Patent and Trademark Office and the courts to flexibly apply the statutory standards governing the issuance of a patent. Thus, *KSR v. Teleflex* rejected the inflexible application of the Federal Circuit's so-called "teaching, suggestion, motivation" standard for proving an invention obvious. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 415 (2007) ("Throughout this Court's engagement with the question of obviousness, our cases have set forth an expansive and flexible approach inconsistent with the way the Court of Appeals applied its TSM test.").

The same flexibility is appropriately applied here. History teaches us to anticipate developments in fields that are presently undiscovered or undeveloped

– such as in the areas of biotechnology and computer software. Developments in some fields – such as in artificial intelligence and neural networks – will raise questions of patentability that are difficult to anticipate. Those developments will represent vital areas of growth and competition for the American economy, and will likely require the spur of patent protection. By contrast, adopting a single, encompassing standard to govern every process invention arising under Section 101 threatens to be over- or under-inclusive. Such a standard is likely to be poorly adapted to the many diverse types of inventions deserving of patent protection that will arise over the coming decades, and may adversely affect those yet-to-be conceived inventions in emerging or unknown technologies.

Patent law has always retained the flexibility to adapt to new developments, carrying society from the agrarian age (the cotton gin), through the industrial age (the electric light and innumerable machines), to the information age (computer-related inventions). Section 101 in particular is a "dynamic provision intended to encompass new and unforeseen inventions." *J.E.M Ag Supply v. Pioneer Hi-Bred Int'l*, 534 U.S. 124, 135 (2001).

Judge Newman, dissenting below, recognized that a rigid interpretation of Section 101 (such as the Federal Circuit's "machine-or-transformation") would exclude many useful inventions, such as "electronic and photonic technologies, as well as other processes that handle data and information in novel ways." *In re Bilski*, 545 F.3d 943, 976 (Fed. Cir. 2008) (Newman, J., dissenting). Indeed, many useful process innovations in the electronic, laser, sonar, and microwave fields would not be patentable under the "machine-or-transformation" standard, such as a novel process for generating a laser beam.

The ABA has thus formally adopted a policy, which is reproduced in full in the Appendix, *infra*, that opposes the application of Section 101 in a manner that articulates fixed and specific requirements that adversely affect yet-to-be conceived but deserving inventions in emerging or unknown technologies. Instead, the ABA endorses a flexible and incremental construction of Section 101.

Incremental decisions by this Court have the further benefit of retaining for Congress its role under the Constitution in the definition of the patent law. Congress regularly examines and adapts the law prospectively to new technologies.

By contrast, dramatic shifts in the definition of patentable subject matter adopted by the judiciary generally operate retrospectively and threaten to unfairly undercut significant investment-backed expectations. Inventors have reasonably acted against the backdrop of a substantial body of precedent interpreting Section 101 broadly. The Federal Circuit's ruling in this case has dramatically departed from prior precedent in a manner that adopts a sweeping, categorical rule. Such a rule creates a significant and unwarranted degree of uncertainty that inhibits innovation.

The Court accordingly should resolve the application of Section 101 to this case and to the important body of similar patent applications, but there is no need to articulate, as the court of appeals has attempted to do, an all-encompassing test for every process case that later may implicate Section 101. The ABA thus endorses the application of the common law tradition of incremental developments in determining the scope of patent eligibility under Section 101.

In particular, the ABA requests that this Court apply its approach of exclusion – deciding this case by announcing that a certain recurring type of claim (mental processes) falls under the category of abstract ideas and thus is not "patent-eligible." The Court's exclusionary approach provides inventors, the Patent and Trademark Office, and the judiciary with significant guidance, without inadvertently tying the hands of patent authorities and the courts with a rule that may prove to be unwise or unworkable. Consistent with its past practice, the Court should incrementally determine, over time and in the context of this and subsequent cases, what inventions do not fall within the category of so-called "patent-eligible" subject matter.

II. It Is Enough To Resolve This Case That Petitioners Claim An Abstract Idea.

A. This Court's Precedents Correctly Settle That Abstract Ideas Are Not Patentable.

This Court has identified types of subject matter that are not "patent-eligible" under Section 101. A patent is not available for laws of nature, physical phenomena, and abstract ideas. *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980). These exceptions include "mental processes and abstract intellectual concepts." *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972). The common element underlying these categories of exclusion is that they represent the basic tools of scientific and technological development and, as such, should remain beyond the control of any patent owner. *Id.* at 66.

The uncertainty over the scope of patent-eligible "processes" in the wake of the Federal Circuit's decision illustrates the wisdom of limiting considerations under Section 101 to an elaboration of the scope of these categories of exclusion. In this case, specifically, claims in which a mental process is central, not ancillary, should be determined to fall within the category of abstract ideas and thus, should not be patentable. Patent law should not interfere with the exercise of human intellect by granting a monopoly on processes in which thinking is central. Such processes "are not the kind of 'discoveries' that the [patent] statute was enacted to protect." *Parker v. Flook*, 437 U.S. 584, 593 (1978). By reaffirming an interpretation of Section 101 excluding claims in which mental processes are central, abstract business methods like tax planning (which the Patent and Trademark Office has to date generally regarded as patentable, United States Patent Classification 705/36T: Tax Strategies, http://www.uspto.gov/patft/class705_sub36t.html (last visited Sept. 29, 2009)) and retirement planning may be unpatentable. If the exercise of human intellect or judgment is central to a claim, then the patentee's contribution of other incidental matter in the claim should be insufficient to support a patent.

The following is an example of abstract claim language[4] that would ordinarily cause a patent claim to be excluded because it specifically requires judgment, reasoning or other abstract ideas:

> A method comprising:
>
> a) selecting options to include in tax-structured payments;
>
> b) performing a valuation of said options;
>
> c) advising a tax client based on said valuation; and
>
> d) preparing a tax return based on the advice.

In this claim, human judgment is central, not ancillary, to the claim. In fact, human judgment is central to every element of the claim: a human selects the options to be valued, performs a valuation, advises a client, and then prepares a tax return that is based on the advice. Accordingly, this claim recites an abstract idea – a mental process – where human judgment is central.

By contrast, a claim may constitute patentable subject matter if it is devoid of abstract ideas and does not require judgment or reasoning, though the claim may require the performance of specific functions such as counting, measuring, inspecting, observing, recognizing, or sensing, rather than abstract reasoning or judgment.

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[4] The application of Section 101 turns on the claim language, because the claim defines the invention. It is the claim – not the title, abstract, or summary of the invention – that defines the relevant subject matter. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 373-74 (1996).

B. Petitioners Claim Only An Abstract Idea.

As Judge Rader correctly recognized in his dissent below, this case could have been resolved in a single sentence: "Because Bilski claims merely an abstract idea, this court affirms the Board's rejection." *Bilski*, 545 F.3d 943, 1011 (D.C. Cir. 2008) (Rader, J., dissenting). *Cf. Diamond v. Diehr*, 450 U.S. 175, 191 (1981) ("when a claim recites a mathematical formula (or scientific principle or phenomenon of nature), an inquiry must be made into whether the claim is seeking patent protection for that formula in the abstract"). Like Judge Rader, the Patent and Trademark Office also recognized that petitioners' claim merely manipulates an abstract idea. Petitioners attempt to preempt any method by which the public would engage in a very basic hedging of commodities risks.

Claim 1 of the Bilski patent claims a series of steps. These include "initiating a series of transactions . . . wherein . . . consumers purchase [a] commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of [the] consumer." *Bilski*, 545 F.3d at 949. The patent does not specify a means for identifying the relevant transaction, the commodity, or the degree of "correspond[ence]" to the appropriate "risk." Rather, the person employing the invention must decide which transaction to perform, the commodity to be used, the risk, and the degree of correspondence to the risk. As a consequence, the claim is nothing more than an abstract idea; it is a vague economic concept. *See id.* at 1013 (Rader, J., dissenting). The claim improperly attempts to assert a monopoly over an almost infinite number of methods of hedging commodity transactions.

Claim 1 also claims "identifying market participants . . . having a counter-risk position to said consumers." *Bilski*, 545 F.3d at 949. This element of the claim is abstract because it requires the exercise of significant reasoning. The individual employing the invention is left to determine how to "identify" the other market participants and to determine what constitutes an appropriate "counter-risk position."

Nonetheless, care is required in rejecting a patent claim as outside the field of patent-eligible subject matter based on the use of particular claim terms. For example, the Bilski patent recites "initiating" certain transactions. It may be possible to identify patent-eligible claims to inventions that recite "initiating" a series of steps – for example, where the term "initiating" is employed in the context of starting a series of well-defined physical steps requiring little judgment. By contrast, where recitation of the same term in the context of "initiating a series of transactions" calls for the exercise of human judgment, such as subjectively determining the best candidates with whom to transact, it is too abstract to satisfy Section 101.

Additionally, it would be possible to identify a patent-eligible claim to an invention that lists the step of "identifying" an object, as when the claim closely specifies the parameters for making the relevant choice. For example, an inventor may seek a patent on a process that permissibly requires "identifying" an electrical input signal according to a particular, specified measurement.

For the foregoing reasons, this Court should elaborate on its prior holdings and conclude that claims to abstract ideas include mental processes such as those set out in Claim 1 of the Bilski patent, and that such claims are excluded from patentability under Section 101.

III. The Federal Circuit's Categorical "Machine-Or-Transformation" Standard Is Contrary To The Statutory Text And This Court's Precedent.

Rather than adopting an incremental approach of excluding non-patentable subject matter, the Federal Circuit adopted a rigid, categorical rule that an invention is patentable under Section 101 only if it is tied to a particular machine or apparatus or transforms a particular article into a different state or thing – the "machine-or-transformation" test.

The Federal Circuit need not have gone so far. Instead, it should have recognized that petitioners' invention is not patentable under this Court's prior precedent. The long-established exclusion of abstract ideas alone resolves this case.

The Federal Circuit's ruling, further, is not supported by this Court's decisions. In *Benson,* the Court expressly declined the invitation to hold that for an invention to consist of patentable subject matter it "must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state of thing.'" *Gottschalk v. Benson*, 409 U.S. 63, 71 (1972). Subsequently, in

Flook, the Court continued to "assume that a valid process patent may issue even if it does not meet one of these qualifications." *Parker v. Flook*, 437 U.S. 584, 589 n.9 (1978).

A "machine-or-transformation" test also is contrary to the structure of the constitutional and statutory grant of patent authority. The patent laws derive from the power to promote the progress of science and the "useful arts." U.S. CONST. art. I, § 8, cl. 8. In our "unitary" patent system, particular categories of "arts" – such as method patents – have never been subject to distinct and more demanding standards of patentability. *Cf. Benson*, 409 U.S. at 67-68 ("We dealt there with a 'product' claim, while the present case deals with a 'process' claim. But we think the same principle applies.").

Patentability under Section 101 governs every possible form of invention. The text of Section 101, extending patent-eligible subject matter to "processes," should not be read to additionally impose the Federal Circuit's rigid "machine-or-transformation" requirement. As Congress did not write Section 101 to tie patentability to any particular physical form, this Court should not impose such a restriction.

CONCLUSION

The judgment should be affirmed on other grounds.

Respectfully submitted,

Of Counsel:
Thomas C. Goldstein
Michael L. Kiklis

CAROLYN B. LAMM
Counsel of Record
PRESIDENT
AMERICAN BAR
ASSOCIATION
321 North Clark Street
Chicago, IL 60654-7598
(312) 988-5000

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APPENDIX

APPENDIX

At its 2009 Annual Meeting, the ABA House of Delegates adopted the following as ABA policy:[5]

> 1) the ABA supports the existing principle that laws of nature, physical phenomena, and abstract ideas are not patentable, even if they are new and non-obvious;
>
> 2) the ABA supports application by the Supreme Court of the United States of the common-law tradition of incremental development of jurisprudential doctrine for determining patent-eligible subject matter under 35 U.S.C. § 101;
>
> 3) the ABA opposes formulations by courts of tests to determine patent-eligible subject matter under 35 U.S.C. § 101 in a manner that articulates fixed and specific requirements that adversely affect yet-to-be conceived but deserving inventions in emerging or unknown technologies; and
>
> 4) the ABA opposes a requirement that a process be explicitly tied to a particular machine or apparatus, or transform a particular article into a different state or thing (i.e., the "machine-or-transformation" test), in order to be eligible for patenting under 35 U.S.C. § 101, but favors, in principle, an evenly applied and more

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[5] This ABA Policy, with its accompanying Report, is also available at http://www.abanet.org/leadership/2009/annual/daily_journal/Three_Hundred_Two.doc.

generalized subject-matter bar on claims that would preempt the use of an abstract idea, thereby better effectuating the broad statutory grant of patent eligibility under 35 U.S.C. § 101 and Supreme Court precedent declining to limit that grant, while ensuring the unfettered use of abstract ideas.

AMICUS
CURIAE
BRIEF

No. 08-964

Supreme Court, U.S.
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In The
Supreme Court of the United States

◆

BERNARD L. BILSKI AND RAND A. WARSAW,

Petitioners,

v.

DAVID J. KAPPOS, UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR, PATENT AND TRADEMARK OFFICE,

Respondent.

◆

On Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

◆

BRIEF OF *AMICI CURIAE* AMERICAN INSURANCE ASSOCIATION, THE HARTFORD FINANCIAL SERVICES, JACKSON NATIONAL LIFE INSURANCE COMPANY, PACIFIC LIFE INSURANCE COMPANY, SUN LIFE ASSURANCE COMPANY OF CANADA (U.S.), AND TRANSAMERICA LIFE INSURANCE COMPANY IN SUPPORT OF RESPONDENT

◆

JESSE J. JENNER
JULIE S. MARTIN
ROPES & GRAY LLP
1211 Avenue of the Americas
New York, NY 10036
(212) 596-9019

JAMES R. MYERS
Counsel of Record
JOSEPH A. PULL
ROPES & GRAY LLP
One Metro Center
700 12th Street, N.W.,
Suite 900
Washington, D.C. 20005
(202) 508-4600

Counsel for Amici Curiae

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INTEREST OF *AMICI CURIAE*[1]

Amici deal in contracts – insurance policies, annuities, and other insurance related services. Accordingly, *amici* will be particularly affected by whether the Court's construction of 35 U.S.C. § 101 expands the definition of patent subject matter eligibility to include abstract ideas – contractual promises in particular – that are administered through routine computer functions like mathematical calculation, record-keeping, and communication. *Amici* are a concrete example of the easily-overlooked "other side" of the delicate balancing act that patent law performs, and a reminder that tests for the protection of actual technological innovation must be tailored so that aggressive applicants cannot use the patent law to seize abstract ideas – including promises – that are the common right of everyone and turn them into a sword against competitors. Several of these *amici* are subject to allegations of infringement by owners of insurance business method patents.

Amicus curiae the American Insurance Association ("AIA") is a leading national trade association which includes some 350 major property and casualty insurance companies that collectively underwrote in excess of $117 billion in direct property and casualty premiums in 2008. AIA members, ranging in size from small companies to the largest insurers with global operations, underwrite virtually all lines of property and casualty insurance, including personal and commercial auto insurance, commercial property and liability coverage for small businesses, workers' compensation, homeowners' insurance, medical malpractice coverage, and product liability insurance. On issues of importance to the property and casualty insurance industry and marketplace, AIA advocates sound and progressive public policies in legislative and regulatory forums at the state and federal levels and files *amicus curiae* briefs in significant cases before state and federal courts, including this Court.

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[1] Consent of all parties to submission of *amicus curiae* briefs has previously been filed with the Court. Pursuant to Rule 37.6, *amici* state that no counsel for any party authored this brief in whole or in part, and no person or entity other than the *amici* or their counsel made a monetary contribution to the preparation or submission of this brief.

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SUMMARY OF ARGUMENT

Insurance providers are currently threatened by patent holders asserting patents that should have been rejected under 35 U.S.C. § 101 as claiming patent-ineligible subject matter. By adding routine computerization to otherwise ineligible concepts like insurance contract features, these patent holders seek to circumvent the traditional limitations of § 101 and essentially secure monopolies on all uses of the claimed insurance contracts and contract features.

In deciding *Bilski*, the Court should frame its discussion of the test for determining patent eligibility under § 101 with an eye toward the rapidly increasing number of such "business method" patent applications that recite a "process" consisting of nothing more than an abstract idea, such as an insurance policy feature or contract term, administered through the routine use of computers. These applications threaten the longstanding rule that no one may patent an abstract idea. They effectively appropriate every practical application of the abstract idea that they claim – despite this Court's past decisions strongly indicating that such subject matter is not eligible for a patent.

The *Bilski* "machine-or-transformation" test for § 101 patent eligibility correctly applies the statute's requirements and prevents clever applicants from obtaining patent protection merely by draping ineligible abstract ideas with unimportant limitations related to routine computerization. This Court should affirm the test and, considering the issues facing industries like insurance that rely heavily on contracts, further explain it, confirming that abstract ideas, including ideas like insurance policies and annuities, may not be patented even if a computer is used to administer them, and that the subject matter eligibility of a patent claim depends on the essence of the claim's innovation, not on the presence of insignificant secondary claim limitations like routine use of a computer. Furthermore, in order to expedite litigation when patents incompatible with § 101 are asserted, the Court should also confirm the procedural consequences of this rule of law – that a district court may rule on § 101 subject matter eligibility without conducting full claim construction for a patent, and that § 101 eligibility may be raised at any point in a litigation.

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ARGUMENT

The Federal Circuit, in its *en banc* opinion, declared that the "machine-or-transformation" test is the only test for determining patent-eligible subject matter for process patents under 35 U.S.C. § 101. *In re **Bilski***, 545 F.3d 943, 956-61 (Fed. Cir. 2008) (*en banc*), *cert. granted*, 129 S. Ct. 2735 (2009). These *amici* support the position of the Patent Office, the test articulated by the Federal Circuit, and the finding that the *Bilski* patent application does not claim patent-eligible subject matter.

Because the *Bilski* patent application does not attempt to claim a machine, the Federal Circuit's explanation of the "machine" prong of the test is understandably and expressly minimal. *Bilski*, 545 F.3d at 962. Nevertheless, for many industries, including providers of insurance, the "machine" prong of the test is an area of critical importance. For decades the insurance industry has used many different kinds of machines to provide insurance services, including typewriters, printers, adding machines, and calculators. Today, the industry intensively uses computer platforms (both hardware and software) to support insurance policies that add contract features to create new combinations. These computer platforms were often developed starting in the second half of the Twentieth Century and routinely modified to accommodate new combinations of insurance policy features. Accordingly, these *amici* respectfully submit that a more comprehensive treatment of the "machine" prong is critically important to their ability to assess the boundaries of patents on insurance business methods.

Of course, this Court may revise the test, or declare a different test. In either event, these *amici* respectfully submit that the Court should account for two very important considerations.

First, abstract ideas such as insurance policies, insurance contracts, annuities, payment obligations, contractual promises, and legal documents are not patent-eligible subject matter under a proper reading of § 101 and this Court's well-established precedent. Similarly, mathematical formulas and algorithms are not patent-eligible. The Court should explicitly reaffirm this principle.

Second, it is also firmly established that insertion of incidental or routine computer tasks as limitations into patent claims does not transmute ineligible subject matter into eligible subject matter. The Court should explicitly reaffirm this principle as well.

I. The Insurance Industry's Concern with, and Real World Examples of, Business Method Patents

Insurance providers have more than a theoretical interest in whether patent subject matter eligibility extends to abstract "business methods" or insurance policy features combined with incidental and routine computer limitations. Many insurers, including several *amici*, now face patent infringement allegations seeking substantial damages or injunctions that stem from such "business method" patents. The asserted claims regularly combine insurance services with routine, incidental administrative computerization. Three examples[2] illustrate the real world nature of such patents.

First, Lincoln National Life Insurance Company is currently asserting three insurance patents[3] against several other life insurance companies.[4]

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[2] Several *amici* are already in litigation or have been threatened by assertions of these example patents.

[3] U.S. Patent Nos. 6,611,815 ("the '815 Patent") (filed Jan. 2, 2001); 7,089,201 ("the '201 Patent") (filed Sep. 24, 1999); and 7,376,608 ("the '608 Patent") (filed Mar. 12, 2001).

[4] *See Lincoln Nat'l Life Ins. Co. v. Transamerica Fin. Life Ins. Co.*, No. 1:04-cv-396-JVB-RBC (N.D. Ind. filed Oct. 21, 2004); *Lincoln Nat'l Life Ins. Co. v. Jackson Nat'l Life Ins. Co.*, No. 1:07-cv-265-JVB-RBC (N.D. Ind. filed Oct. 30, 2007); *Lincoln Nat'l Life Ins. Co. v. Transamerica Life Ins. Co.*, No. 2009-1403, 1491 (Fed. Cir. filed June 16, 2009); *Lincoln Nat'l Life Ins. Co. v. Transamerica Fin. Life Ins. Co.*, No. 1:08-cv-135-JVB-RBC (N.D. Ind. filed May 20, 2008); *Sun Life Assurance Co. of Can. (U.S.) v. Lincoln Nat'l Life Ins. Co.*, No. 1:09-cv-10245-GAO (D. Mass.

(Continued on following page)

These three patents, with the '815 Patent as a particular example, seek to preempt an entire category of contracts, a type of variable annuity that provides guaranteed minimum payments to policy holders combined with potentially larger distributions based on positive stock market performance.[5]

Second, Equitable Life & Casualty Insurance Company is currently asserting against American National Insurance Company[6] a patent[7] ("the '645

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filed Feb. 18, 2009); *Merrill Lynch Life Ins. Co. v. Lincoln Nat'l Life Ins. Co.*, No. 2:09-cv-158-JVB-RBC (N.D. Ind. filed June 5, 2009).

[5] Claim 1 of the '815 Patent recites:

> 1. A data processing method for administering an annuity product having an account value and a guarantee of lifetime payments, comprising the steps of:
>
> a. establishing a charge for paying the lifetime payments after the account value reaches zero in accordance with the guarantee;
>
> b. using a computer:
>
>   1. determining an initial benefit payment;
>   2. determining a subsequent periodic benefit payment; and
>   3. periodically determining the account value;
>
> c. periodically paying the initial payment and the subsequent payment and reporting the account value to the beneficiary.

U.S. Patent No. 6,611,815, col.13, ll.41-51 (filed Jan. 2, 2001).

[6] *Equitable Life & Cas. Ins. Co. v. Am. Nat'l Ins. Co.*, No. 2:09-cv-00580-TC (D. Utah filed July 1, 2009).

[7] U.S. Patent No. 5,761,645 ("the '645 Patent") (filed Dec. 21, 1995). The '645 Patent uses a "means-plus-function" claim

(Continued on following page)

Patent") that claims a "system" whereby designated life insurance beneficiaries receive gift payments on specific dates over a period of years, *e.g.*, birthday gifts for ten years.[8]

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format and is not a "method" claim. Because the claims must be considered as a whole, consistent with *Diamond v. Diehr*, 450 U.S. 175, 188 (1981), the "means-plus-function" claim format should be irrelevant to the analysis under § 101.

[8] Claim 1 of the '645 Patent recites:

> 1. A system for enabling delivery of insurance gift payments that an insurer is to make to designated beneficiaries on behalf of insureds, the system comprising:
>
> input means for receiving at least information regarding at least one insured, at least one insurance gift plan, at least one occasion or date to send each gift, at least one message to send with the gift, and at least one beneficiary, said input means associated with means for entering received information into a storage device, and for accessing and modifying information in said storage device;
>
> calculating and formatting means, responsive to said input means, for processing stored information, and creating insurance plan tables and schedules;
>
> processing means, responsive to the calculating and formatting means, for determining an amount for each gift payment, and, after the insured has died, determining when each message and gift are to be sent to arrive for the occasion or date; and
>
> output means, responsive to the processing means, for providing information stored in the storage device in formatted form.

U.S. Patent No. 5,761,645, col.47 ll.12-33 (filed Dec. 21, 1995).

A third set of patents[9] is being asserted[10] against financial services companies, including life, property, and casualty insurers. For example, Claim 2 of one of these patents, the '434 Patent, recites a method for automatic selection and presentation to a client of financial services appropriate to the client. Like the other examples cited, this claim does not address any novel computer technology; instead it centers on the idea of automatically customizing financial services for presentation to an individual.[11]

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[9] U.S. Patent Nos. 5,987,434 ("the '434 Patent") (filed June 10, 1996); 6,076,072 ("the '072 Patent") (filed Apr. 15, 1997); and 6,999,938 ("the '938 Patent") (filed July 16, 1999).

[10] *Phoenix Licensing, L.L.C. v. Allstate Corp.*, No. 2:09-cv-255-TJW (E.D. Tex. filed Aug. 24, 2009).

[11] Claim 2 recites:

> 2. A method for using client information about clients comprising a plurality of client records to automatically select and present financial products appropriate for the clients, the method comprising:
>
> automatically inputting into a computer-accessible storage medium the client information including the plurality of client records without human intervention between input of the respective client records, inputting information about the financial products, and inputting decision criteria pertaining to selection from among the financial products;
>
> using a central processing unit in communication with the storage medium to select a subset of the financial products for each of the clients appropriate for that client using the client information, the financial products information, and the decision criteria; and

(Continued on following page)

As these examples show, applicants now often seek and obtain patent protection for innovations that are nothing more than abstract ideas incidentally administered through routine use of an ordinary computer system. With this formula for framing their claims, they seek to imply a machine-based innovation that would qualify as patent-eligible subject matter.

Accordingly, the insurance industry currently labors under a cloud of uncertainty – and bears the cost of resulting litigation – associated with business method patents that recite the use of a "machine." Yet this Court's precedents strongly support the conclusion that incidental, routine use of a computer to administer otherwise patent-ineligible ideas does not ritualistically convey patent eligibility. This principle should be explicitly declared in the Court's construction of the § 101 test in the present case.

II. § 101 Patent Eligibility for Process Claims

Whether a process claim is patent-eligible subject matter under 35 U.S.C. § 101 is a "threshold inquiry" of patent validity. *Bilski*, 545 F.3d at 950-51.

> using an output device to prepare a client communication for each of the clients which identifies the subset of the financial products appropriate for that client.

U.S. Patent No. 5,987,434, col.20 l.58 – col.21 l.10 (filed June 10, 1996).

Accordingly, any patent claim "failing the requirements of *§ 101* must be rejected even if it meets all of the other legal requirements of patentability." *Id.* This threshold inquiry is an issue of law. *Id.* at 951.

A. Exclusions from Patent-Eligible Subject Matter

Diehr, 450 U.S. at 185, reiterates the familiar principle that a process may be patented, but that under § 101 patent eligibility does not extend to "laws of nature, natural phenomena, [or] abstract ideas." *Diehr* rests on a foundation of other Supreme Court decisions illuminating the meaning of a patent-eligible invention.

Mathematical Formulas and Algorithms

Descriptions of the natural operations of the world cannot be patented. "[N]o one can appropriate this power exclusively to himself, under the patent laws. The same may be said of electricity, and of any other power in nature, which is alike open to all. . . ." *Le Roy v. Tatham*, 14 How. (55 U.S.) 156, 175 (1852). Nor can mathematical formulas and algorithms, the concise expressions of natural laws, be patented. *Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972). The rules defining the pre-existing constraints and operations of the human environment are laws of nature and abstract realities, not patent-eligible inventions. "The underlying notion is that a scientific principle, such as that expressed in respondent's algorithm, reveals a relationship that has always existed." *Parker v. Flook*, 437 U.S. 584, 593 n.15 (1978).

Human Goals and Objectives

The goals and objectives of human activity cannot be patented. "A patent is not good for an effect, or the result of a certain process, as that would prohibit all other persons from making the same thing by any means whatsoever. This, by creating monopolies, would discourage arts and manufactures, against the avowed policy of the patent laws." *Le Roy*, 14 How. (55 U.S.) at 175. "'It is for the discovery . . . of some practical method . . . of producing a beneficial result . . . that a patent is granted, and not for the result or effect itself.'" *Diehr*, 450 U.S. at 182 n.7 (*quoting Corning v. Burden*, 15 How. (56 U.S.) 252, 268 (1854)). No one may patent the abstract purposes that humans pursue. Regardless of what patents issue, people are always free to seek alternative means of obtaining a particular outcome.

Human Thoughts, Decisions, Acts

The operations of a human mind cannot be patented. Mental processes and intellectual concepts are "basic tools," *Benson*, 409 U.S. at 67, that are beyond patenting because they are critical to science, technology, and commerce. "'[A]n original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right.'" *Flook*, 437 U.S.

at 589 (*quoting Le Roy*, 14 How. (55 U.S.) at 175). Humans are free to act and to think; patent eligibility only applies to new discoveries that exist apart from the operation of a human mind.

Patent-Eligible Subject Matter

The established examples of patent-ineligible concepts sketch a picture of what is required for a patent-eligible process. Patents issue for new discoveries that link intangible principles to a human goal by means of some specific, tangible technique other than use of the human mind. "[T]he processes used to extract, modify, and concentrate natural agencies, constitute the invention. The elements of the power exist; the invention is not in discovering them, but in applying them to useful objects." *Le Roy*, 14 How. (55 U.S.) at 175. "'If there is to be invention from such a discovery [of a hitherto unknown phenomenon of nature], it must come from the application of the law of nature to a new and useful end.'" *Benson*, 409 U.S. at 67 (*quoting Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948)). "'A process is a mode of treatment of certain materials to produce a given result.'" *Benson*, 409 U.S. at 70 (*quoting Cochrane v. Deener*, 94 U.S. 780, 788 (1877)).

Numerous *amici* emphasize the unpredictable nature of new discoveries, invoking the "Twenty-First Century" as a cliché to support an unfounded argument that § 101 must be thrown open to all comers lest innovation cease. Instead, the Court should remain mindful of the reasons underlying the exclusions from, and limitations of, § 101. The logical framework established by the Court's past decisions accommodates new types of discoveries while guarding against harmful monopolization of natural laws, human objectives, and human mental processes.

B. Insurance Policies Historically Are Not Patent-Eligible Subject Matter

Questions about patent subject matter eligibility often arise in the context of mathematical algorithms. *E.g., Diehr*, 450 U.S. 175; *Flook*, 437 U.S. 584; *Benson*, 409 U.S. 63. But exclusions from eligibility under § 101 go far beyond algorithms; they include insurance and legal guarantees, insurance valuations and calculations, insurance strategies, administration of insurance contracts, marketing campaigns and strategies, offers for sale, and business models, among other intangibles.

Insurance contracts – obligations to pay money upon the occurrence of specified events – are prototypical examples of abstract ideas. *See, e.g.*, 2 *Manual Of Patent Examining Procedure* § 2106, at 2100-10 (8th ed. 2001, rev. 2008) ("For example, a claim reciting only a musical composition, literary work, compilation of data . . . or **legal document (*e.g.*, an insurance policy)** *per se* does not appear to be a process, machine, manufacture, or composition of matter.") (emphasis added). Such practices are human decisions, interactions, mental processes, and intellectual concepts – basic tools of modern commerce. Often these practices embody the "result or effect itself" of a human objective or goal, such as risk-spreading or securing income.

The courts properly disallow patent claims for such intangible "inventions." For example, the Federal Circuit recently rejected patent claims for "a method and system for mandatory arbitration involving legal documents, such as wills or contracts," *In re Comiskey*, 554 F.3d 967, 970 (Fed. Cir. 2009), as an attempt to "patent the use of human intelligence in and of itself," *id.* at 981. *See also In re Schrader*, 22 F.3d 290, 291 (Fed. Cir. 1994) (rejecting claim for "method of competitively bidding on a plurality of related items"); *In re Meyer*, 688 F.2d 789, 790 (C.C.P.A. 1982) (rejecting claim for method of testing complex system by dividing into "elements" and associating a score of function or malfunction to each element); *In re Maucorps*, 609 F.2d 481 (C.C.P.A. 1979) (rejecting claim for computer-assisted method of sales representative organization); *Hotel Sec. Checking Co. v. Lorraine Co.*, 160 F. 467, 469 (2d Cir. 1908) (rejecting claim for method of preventing fraud by waiters and cashiers through use of receipts).

Nevertheless, claimants continue to assert patent rights over intangible, abstract ideas in the vein of *Comiskey*. The '815 Patent and the '645 Patent recite claim limitations that explicitly refer to legal obligations to make payments. The '815 Patent describes a method for calculating and administering distributions to beneficiaries of annuity contracts. The '645 Patent claims using life insurance to fund future birthday gifts to loved ones. The claims of the '434 Patent are yet more general, addressing use of a computer to select automatically various types of life insurance or home mortgages based on given factors. This Court should explicitly confirm that an "invention" directed to legal obligations and legal documents, such as insurance policies, does not present patent-eligible subject matter.

C. Insurance Company Activities and the Machine-or-Transformation Test

1. Transformation

Calculation of changes in insurance account values or insurance payments, and incidental administrative activities to implement transactions such as writing checks and making payments, are not patent-eligible transformations. *See Bilski*, 545 F.3d at 963-64 (holding that "[p]urported transformations or manipulations simply of public or private legal obligations or relationships, business risks, or other such abstractions" do not meet the transformation prong). Simply making payments and calculating changes in account value as claimed in the '201, '815, and '608 Patents is not a sufficient physical transformation. *See also* U.S. Patent No. 5,761,645 (filed Dec. 21, 1995).

2. Machine

While a claim cannot be summarily declared patent-ineligible based on its discrete parts, it also cannot be the case that tacking on incidental, routine computer- or machine-implementation to a mathematical algorithm or an abstract idea transfigures the algorithm or idea into patent-eligible subject matter. Both *Flook* and *Benson* found claims ineligible even though they recited a computer. *Flook*, 437 U.S. at 586, 589-90, 595; *Benson*, 409 U.S. at 65, 69-70, 73. Implicitly, the Court held that patent applications do not express patent-eligible subject matter merely by reciting the use of general computers to carry out routine tasks commonly performed on computers.

Instead, the Court in *Diehr* suggested that patent eligibility requires the claim, as a whole, to be directed toward patent-eligible subject matter. *Diehr*, 450 U.S. at 188-89. It was irrelevant to the claimant-favorable conclusion in *Diehr* that the claimed process used a computer to perform calculations. *See id.* at 183-84. Rather, the Court cautioned "a claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula, computer program, or *digital computer*." *Id.* at 187 (emphasis added).

By definition any working computer has the ability to perform various routine tasks, such as making calculations (*e.g.*, determining, adjusting), engaging in communication (*e.g.*, inputting, outputting, coupling, displaying, presenting), and saving data (*e.g.*, storing, memory). *See Microsoft Computer Dictionary* 118 (5th ed. 2002); *IEEE 100: The Authoritative Dictionary of IEEE Standards Terms* 207-08 (7th ed. 2000). Accordingly, patent claims that merely recite routine computing activities, such as the examples cited above, do not transform abstract ideas into patent-eligible subject matter.

III. Evaluating § 101 Eligibility

A. Mere Combination of Routine Computer Limitations with Insurance Policy and Contract Features, However Novel, Is Not Patent-Eligible

Section 101 patent eligibility is separate from, and does not require determining, a claim's novelty or obviousness, the patentability requirements from 35 U.S.C. §§ 102 and 103. *See Diehr*, 450 U.S. at 189-90. Patent-eligibility under § 101 can be informed by the following question:

> Does the claim merely recite an abstract idea or mathematical algorithm performed on a general purpose computer using generic operations, such as inputting, storing, processing, calculating, determining, comparing, adjusting, networking, displaying, and outputting?

An affirmative answer to this question provides a strong indication that the claim is not patent-eligible.[12] *See Bilski*, 545 F.3d at 957, 963 ("[E]ven if a claim recites a specific machine or a particular transformation of a specific article, the recited machine or transformation must not constitute mere 'insignificant postsolution activity'"); *In re Grams*, 888 F.2d 835, 841 (Fed. Cir. 1989) (concluding that claims directed to a method of testing complex systems were patent-ineligible subject matter, even with requirement that method be performed on a general computer); *Maucorps*, 609 F.2d at 482, 486 (holding system for processing data patent-ineligible where claims merely covered a mathematical process carried out on computer). Without a specific technological advancement, an abstract idea depends only upon the use of mental processes – even if a computer or machine can be used to automate the mental process.

Since *Bilski*, the Patent Office has rejected patent-ineligible process claims that attempt to overcome rejection by adding a limitation requiring a general purpose computer. *See, e.g., Ex parte Halligan*, Appeal No. 2008-1588, slip op. at 26-27 (B.P.A.I. Nov. 24, 2008). Adding a limitation for using a general purpose computer to otherwise patent-ineligible method steps would, as the Patent Office stated, "exalt form over substance" and "allow preemption of a fundamental principle." *Id.* at 27.

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[12] If the claim is based on technological innovation rather than an abstract idea combined with routine general purpose computer limitations, then the subject matter should be patent-eligible. *See Flook*, 437 U.S. at 594.

Examples

The Lincoln method patent claims often specify computer involvement for administering contracts, but the recited computer limitations (*e.g.*, inputting, storing, determining, adjusting, comparing) are incidental, routine, and only tangentially related to the claimed innovation. The only mention of a computer that appears in the '815 Patent is the phrase "using a computer" in Claim 1.[13] During the Patent Office's examination of the '201 Patent the examiner indicated that various computer limitations were well known and provided no basis for patent-eligibility.[14] The novelty asserted by the patent owner is based on the features of the annuity contract. Though Claim 1 of the '815 Patent recites computerized administration of the annuity, the computer steps in the process (*e.g.*, "determining") cannot convey patent subject matter eligibility; computer systems used to administer variable annuities are so old and well known that they often still rely on a variant of the COBOL programming language first developed in 1959. This claim recites an abstract idea (a patent-ineligible insurance policy) administered using routine computer features that have been used for decades to administer a wide range of prior art annuities.

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[13] U.S. Patent No. 6,611,815, col.13 l.47 (filed Jan. 2, 2001).

[14] U.S. Patent No. 7,089,201 Office Action (dated June 26, 2002) at 10.

In the second example above, the system claimed in the '645 Patent releases gift payments to designated beneficiaries on specific dates over a period of years (*e.g.*, birthday gifts for ten years).[15] However clever one may regard the idea of being able to use life insurance to send birthday gifts to loved ones after death, any novelty in this patent surely does not lie in its computer aspects. The '645 Patent specification describes a general purpose computer, *see, e.g.*, Fig. 1, along with "system" claim limitations that are generic and incidental (*e.g.*, inputting means, calculating and formatting means, processing means, outputting means). In fact, several of the limitations were added during prosecution to overcome a rejection of the claims by the examiner under § 101.[16] The tangential relationship between the underlying insurance features and the computer administration recited in the patent claims clearly establishes that this is not patent-eligible subject matter under § 101. *Cf. Aristocrat Techs. Austl. Pty. Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008).

A third example is Claim 2 of the '434 Patent, which claims, in part, a method for automatic selection and presentation to a client of financial services offers appropriate to the client. The computer limitations in Claim 2 refer to inputting and selecting. The apparatus claims of Claim 1 add to these routine operations coupling, storing, and preparing these offers. In reexamination, the patent owner argued that prior art describing selection and marketing of pre-existing financial services did not anticipate the system in the '434 Patent because this system *automatically* selected and presented financial services appropriate to the customer.[17] The claims of the '434 Patent simply relate to customizing a financial services offer for automatic presentation. This is not eligible subject matter under § 101, and the *Bilski* "machine-or-transformation" test properly and efficiently confirms that conclusion.

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[15] U.S. Patent No. 5,761,645, col.47 ll.12-38 (filed Dec. 21, 1995).

[16] U.S. Patent No. 5,761,645 Office Action (mailed Mar. 31, 1997) at 2; U.S. Patent No. 5,761,645 Amendment (filed July 30, 1997) at 2-8.

B. Claims Preventing All Practical Applications of an Insurance Policy Feature are Not Patent-Eligible

Not only does a patent claim limitation reciting computerized administration of an idea fail to convert an abstract insurance idea into a specific and practical application that would qualify under § 101, such a "limitation" also fails § 101 by preempting every practical application of the abstract idea.

One frequent characteristic of a patent claim to an abstract idea or mathematical algorithm is a lack of precision such that the claim covers any and every possible way of applying the idea to a practical purpose. *Benson*, 409 U.S. at 64, 71-72. *See Le Roy*, 14 How. (55 U.S.) at 175; *Corning*, 15 How. (56 U.S.) at 268. Where a patent claim, taken as a whole, covers all practical ways of applying an abstract idea or mathematical algorithm, or the claim lacks the concrete steps or structures that would limit the claim, the claim is not patent-eligible under § 101. *See Benson*, 409 U.S. at 64, 71-72 (holding claim patent-ineligible where it was "not limited to any particular art or technology, to any particular apparatus or machinery, or to any particular end use" and would thus "wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself").

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[17] U.S. Patent No. 5,987,434 Amendment A and Response to Office Action (faxed Feb. 21, 2006) at 33-37.

The routine way for an insurer to perform many of the calculations associated with modern insurance contracts while also meeting the relevant timing obligations is to automate many of the data calculation and storage functions using computers.[18] The calculations need to be performed reliably, quickly, and for many accounts. Therefore, adding a computer to an insurance method patent claim is a meaningless limitation. Insurance policy features are increasingly performed by computer. Thus, an insurance patent claim that is "limited" to implementation via computer is not actually limited at all.

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[18] Use of a computer, of course, also requires inputting and outputting, other steps frequently claimed in patent applications for abstract ideas administered through computers.

Since insurance methods are routinely practiced in the real world via computer, an insurance method patent claim implemented by computer would impermissibly preempt the field of every routine application of the insurance concept. *See id.* at 64, 71-72; *Bilski*, 545 F.3d at 957.

Examples

During prosecution of the '815 Patent, the applicant added a limitation by Supplemental Amendment that the annuity process be performed "using a computer."[19] Because the claim would routinely be practiced in the industry by a computer performing those routine functions, the amendment added no meaningful limitation whatsoever.

A second example is the '645 Patent. The examiner initially rejected its claims, in part, because "[a] general purpose computer is being used for merely manipulating an abstract[ ] idea without any limit to a practical application."[20] The applicant subsequently amended the claim to add terminology describing the computer functions that would manipulate the inputted data (calculating, formatting, storing, etc.).[21] It argued that the computer was a specific purpose machine, relying on the computer manipulation of the gift payment data to save the otherwise patent-ineligible abstract idea.[22] However, every routine method of practicing this abstract idea is still preempted by this patent, since no real world business would actually administer this insurance contract without using computers.

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[19] U.S. Patent No. 6,611,815 Supplemental Amendment (faxed Nov. 5, 2002) at 3-4.

[20] U.S. Patent No. 5,761,645 Office Action (mailed Mar. 31, 1997) at 2.

The third example cited above, the '434 Patent, itself provides evidence that certain methods, like the customization of financial services offers for presentation to a client, are only routinely carried out on a large scale if performed automatically. After the patent's independent Claims 1 and 2 were rejected in prosecution, the applicant responded that one of the key improvements over the prior art was the method's provision for automatic inputting of client records, without human intervention. It emphasized that the prior art method was "inherently slow" and that its computer-automated method was "particularly adapted for highly automated *mass market high volume* applications."[23]

Routine computerized automation of a known process does not provide an independent basis for patent eligibility. Any modern company seeking to present customized financial services to large numbers of clients would likely use automated means for inputting client data. Since the patent claims any use of automated input methods, even in conjunction with some manual data input, in a computerized world it would co-opt the value of all prior practices and preempt the field from any practical method of practicing the described idea.

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[21] U.S. Patent No. 5,761,645 Amendment (filed July 30, 1997) at 2-6.

[22] *Id.* at 8.

[23] U.S. Patent No. 5,987,434 Amendment A and Response to Office Action (faxed Feb. 21, 2006) at 35-36.

C. Token Post-Solution Activity Does Not Make an Otherwise Ineligible Patent Claim Eligible

Adding a general purpose computer as a token limitation to a patent claim cannot transform an otherwise patent-ineligible claim into an eligible one. *See, e.g., Benson*, 409 U.S. at 64-73 (method of programming general purpose digital computer to convert signals from decimal to binary form not patent-eligible subject matter). If merely adding the words "using a computer" to a patent claim, with nothing more, were sufficient to save a method claim from being found invalid, the prohibition against patenting abstract ideas would, in effect, become meaningless. Virtually any method involving an algorithm can be performed "using a computer." *See Flook*, 437 U.S. at 590 ("The notion that post-solution activity, no matter how conventional or obvious in itself, can transform an unpatentable principle into a patentable process exalts form over substance. A competent draftsman could attach some form of post-solution activity to almost any mathematical formula. . . ."); *Grams*, 888 F.2d at 841 (adding limitation to a claim "that the method be performed with a programmed computer" does not turn claim into eligible subject matter).

There is a clear gap between an abstract idea and a patent-eligible process, and the determination of whether a patent claim transcends that gap must focus on the center of the claim, not meaningless appendages such as routine computer limitations. *Cf. Flook*, 437 U.S. at 591 (process itself rather than the mathematical algorithm must be new and useful); *Quanta Computer, Inc. v. LG Elecs., Inc.*, ___ U.S. ___, 128 S. Ct. 2109, 2120 (2008) (asking whether the "essential features" of a patent exist in a product for purposes of determining patent exhaustion).

Examples

The '815 Patent claims are directed to data processing methods for administering an annuity contract. When originally filed, the claims neither mentioned nor required the use of a computer. The claims as eventually issued contain exactly one tie to a computer – the limitation "using a computer" which, according to the patent examiner, was added as a Supplemental Amendment to avoid rejection of the claims for covering ineligible subject matter.[24] The essence of the invention claimed by the '815 Patent is an abstract idea – a variable annuity contract.

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[24] U.S. Patent No. 6,611,815 Office Action (filed Nov. 25, 2002) at 2.

The '645 Patent discloses a procedure of making gift payments to designated beneficiaries on designated dates over a period of years.[25] The examiner found the patent lacking in both pre- and post-solution activity and rejected the claims under § 101 as directed to the manipulation of an abstract idea.[26] Then the claims were amended to add computerized steps, including calculating, formatting, storing, and delivering information.[27] The patentee argued that the revisions more clearly claimed the invention and that the system constituted a specific machine.[28] However, these routine computer limitations are incidental to the essence of the patent, the technique of designating gift payments for numerous specific dates in the future. The prosecution history shows that the system limitations exist merely as an attempt to bring a patent-ineligible abstract idea about devising gifts within the ambit of § 101.

The essence of the '434 Patent is the idea of automatically selecting and presenting to a client financial service offers custom chosen as appropriate for that client. In reexamination proceedings the patent owner relied heavily on the "automatic" provisions in the claims as the basis for patent eligibility, but these provisions amount to nothing more than routine application of data storage and sorting capabilities of a general purpose computer.[29] The functions performed by the computer are not the heart of the claimed invention.

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[25] U.S. Patent No. 5,761,645, col.47, ll.12-38.

[26] U.S. Patent No. 5,761,645 Office Action (mailed Mar. 31, 1997) at 2.

[27] U.S. Patent No. 5,761,645 Amendment (filed July 30, 1997) at 2-6.

[28] *Id.* at 8.

The discussions in *Bilski* and various other lower court cases, such as *In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994), of "special purpose computers" are not helpful in analyzing the "machine" prong of the test for two reasons. First, there is no doctrinal or logical support for the notion that applying the label "special purpose computer" makes the claim patent-eligible subject matter under § 101. Instead, this Court has stated in *Benson, Flook,* and *Diehr* that merely inserting a digital computer into claim language is insufficient to transform abstract ideas into patent-eligible subject matter. To determine whether a claim covers patent-eligible subject matter requires specific consideration of whether the computer limitations (and the claim considered as a whole) represent a technological innovation. Second, the combination of routine computer limitations with very specific abstract ideas (*e.g.*, providing guaranteed minimum payments under specified conditions in Claim 1 of the '815 Patent) does not mean that the patent claims considered as a whole address a special purpose computer. Adding routine, generic computer limitations into patent claim language (especially limitations that simply recite attributes of a general purpose computer) cannot transform a patent claim into coverage of a "special purpose computer." The focus in assessing patent eligibility should be on the essence or essential elements of the claimed invention – not token limitations. *Cf. Quanta*, 128 S. Ct. at 2120.

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[29] *See* U.S. Patent No. 5,987,434 Amendment A and Response to Office Action (faxed Feb. 21, 2006) at 33-37.

IV. Role of § 101: Claim Construction and Timing

In addition to the above analysis and examples about the real world implications of the substance of the test for patent-eligible subject matter under § 101, *amici* offer two procedural observations associated with how and when § 101 is applied.

A. § 101 Determination May Be Made After Only Limited Claim Construction

The determination of subject matter eligibility under § 101 should not require a full claim construction of all disputed claim terms. Just as § 101 can make it unnecessary to decide whether a patent application satisfies the requirements of § 102 (novelty) and § 103 (non-obviousness),[30] so too should § 101 make it unnecessary to fully construe all claims in a patent.

It is well-established that district courts have broad discretion over the process of claim construction. "[P]rocedurally a district court may conduct its claim construction task in any way, and at any time, it deems best suited to the particular case." Robert A. Matthews, Jr., *Annotated Patent Digest* § 3:14 (2009). This discretion includes the extent of claims construed. Only "'those [claim] terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.'" *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1311 (Fed. Cir. 2005) (*quoting Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Full claim construction is moot if a patent claim fails the legal threshold § 101 test. Under such circumstances, not all disputed claim terms need be fully construed for a district court to grant summary judgment. *E.g., CyberSource v. Retail Decisions*, 620 F. Supp. 2d 1068, 1073 (N.D. Cal. 2009) (assuming plaintiff's construction of claims for purpose of deciding § 101 issue).

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[30] *Diehr* confirmed that "[t]he question therefore of whether a particular invention is novel is 'wholly apart from whether the invention falls into a category of statutory subject matter.'" 450 U.S. at 190 (*quoting In re Bergy*, 596 F.2d 952, 961 (C.C.P.A. 1979)). In *Flook* the Court rejected the claim as patent-ineligible subject matter under § 101 even though "[f]or the purpose of our analysis, we assume that respondent's formula is novel and useful and that he discovered it." 437 U.S. at 588.

B. § 101 Challenges May Be Raised at Any Time

In addition to being the threshold requirement for an individual to obtain patent rights, subject matter eligibility also marks the boundaries of the statutory patent regime and of the rights of the public. As an inherently legal question with such broad significance to the wider public, it must be handled with diligence whenever it arises. Litigants should be able to raise § 101 eligibility at any point in a case – including during trial or on appeal.

The district courts have taken widely divergent views of whether subject matter eligibility must immediately be raised. *Compare Research Corp. Techs. v. Microsoft Corp.*, No. CV-01-658, 2009 WL 2413623 (D. Ariz. July 28, 2009) (considering § 101 subject matter eligibility in summary judgment motion filed five years after defendant filed initial motion for partial summary judgment) *with Transamerica Life Ins. Co. v. Lincoln Nat'l Life Ins. Co.*, 590 F. Supp. 2d 1093, 1103-05 (N.D. Iowa 2008) (declining to allow addition of § 101 subject matter eligibility defense one year after deadline to amend pleadings). Attempting to apply patent law concepts to patent ineligible subject matter will necessarily result in distorted outcomes which may very well prevent legitimate competition, against the public interest. There is never a public interest in granting a practical monopoly to patent claims that are not even within the intellectual jurisdiction governed by patent law. Given this important public interest, challenges under § 101 should be considered whenever raised.

◆

CONCLUSION

Many technological innovations have improved efficiency and reduced costs in the insurance industry. The computer and the internet are the most recent, but surely not the last. Accordingly, the industry needs clear guidance from this Court regarding the scope of "business method" patents and the role that a "machine" plays within them.

As supported above, it is the view of these *amici* that (1) mathematical algorithms and abstract ideas such as insurance policies, insurance contracts, annuities, payment obligations, contractual promises, and legal documents are not patent-eligible subject matter under a proper reading of § 101 and this Court's precedents; and (2) the addition of incidental or routine computer limitations or post-solution activity to administer an abstract idea does not transform ineligible subject matter into eligible subject matter.

These *amici* respectfully request guidance and clarity from this Court on these critically important issues.

Respectfully submitted,

JESSE J. JENNER
JULIE S. MARTIN
ROPES & GRAY LLP
1211 Avenue of the Americas
New York, NY 10036
(212) 596-9019

JAMES R. MYERS
Counsel of Record
JOSEPH A. PULL
ROPES & GRAY LLP
One Metro Center
700 12th Street, N.W.,
Suite 900
Washington, D.C. 20005
(202) 508-4600

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AMICUS
CURIAE
BRIEF

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In The Supreme Court Of The United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF *AMICUS CURIAE* AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION IN SUPPORT OF NEITHER PARTY

TERRY STANEK REA	WILLIAM K. WEST, JR.
PRESIDENT	*Counsel of Record*
American Intellectual	PAMELA S. KANE
Property Law Assoc.	MICHAEL J. STIMSON
241 18th St., S., Ste.700	1299 Pennsylvania Ave., NW
Arlington, VA 22202	Washington, D.C. 20004
(703) 415-0780	(202) 783-0800

Counsel for Amicus Curiae
American Intellectual Property Law Association

4X95QE

QUESTIONS PRESENTED

Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ('machine-or-transformation' test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

Whether the Federal Circuit's "machine-or-transformation" test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273.

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I. INTRODUCTION AND STATEMENT OF INTEREST OF *AMICUS CURIAE*[1]

Although Petitioners' patent application specifically relates to a "business method," the questions presented directly affect innovation in many other existing and unknown future types of technology. In fashioning a new and unprecedented rule, the Federal Circuit has restricted the threshold requirement for patent eligibility by excluding all processes unless they are tied to a machine or transform articles to a different form. The Federal Circuit test effectively curtails innovation in as yet unknown, future areas of discovery as well as disrupts settled expectations concerning issued patents in many existing technologies.

The American Intellectual Property Law Association ("AIPLA") is a national bar association of more than 16,000 members engaged in private and corporate practice, in government service, and in the academic community. AIPLA represents a wide and diverse spectrum of individuals, companies, and institutions involved directly and indirectly in the practice of patent, trademark, copyright, and unfair competition law, as well as other fields of law affecting intellectual property. AIPLA members represent both owners and users of intellectual property.

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[1] This *amicus curiae* brief is presented by the American Intellectual Property Law Association under Supreme Court Rule 37.3(a). Petitioners have consented to the filing of this *amicus curiae* brief via blanket letter of consent on file with the Court dated June 9, 2009, and respondent has consented via a separate letter of consent dated June 12, 2009. In accordance with Supreme Court Rule 37.6, *amicus curiae* states that no counsel for a party authored any part of this brief. Only this *amicus curiae* made monetary contribution to the preparation and submission of this brief. Counsel for *amicus curiae* prepared this brief on a *pro bono* basis.

AIPLA takes no position on the merits of Petitioners' alleged innovation and on whether their application ultimately should or should not receive a patent. AIPLA's sole interest is in the threshold rule of law for obtaining patent rights, and in ensuring that the patent law continues to provide the incentives that serve the Constitutional purpose of promoting the progress of science and the useful arts in accordance with Article I, Section 8.

In compliance with Rule 37 of this Court, AIPLA has notified and obtained the consent of both Petitioners and Respondent to file this amicus brief.

II. SUMMARY OF ARGUMENT

The first question presented, as in *Diamond v. Chakrabarty*, 447 U.S. 309 (1980), *Diamond v. Diehr*, 450 U.S. 180 (1981), and *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred International, Inc.*, 534 U.S. 124 (2001), concerns the proper construction of Section 101 of the Patent Act, the section that extends patent *eligibility* (but, importantly, not *patentability*) to "*any* new and useful *process*, machine, manufacture, or composition of matter, or any new and useful improvement thereof, *subject to* the conditions and requirements of this title." 35 U.S.C. § 101 (emphasis added).

In the 1952 Patent Act, Congress added 35 U.S.C. § 100(b) to make clear that the term "process" in § 101 was intended to have a broad meaning that subsumed all antecedent terms, such as "art":

> The term "process" means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.

However, the Federal Circuit majority ignored the clear Congressional intent that any process be patent-eligible and instead, by misinterpreting this Court's precedents, held that to be patent-eligible under 35 U.S.C. § 101, any "process" *must first* (1) be tied to a particular machine or apparatus, or (2) transform a particular article into a different state or thing (the "machine or transformation" test). Pet. App. at 12a.

There is no support for a "machine or transformation" requirement found in the Patent Statute, or its legislative history. Instead, this test is derived from dictum and tied to the vocabulary of technologies developed in earlier ages, and thus is backward-looking and ill-fitted to future discoveries and technologies as yet unimagined.

The Federal Circuit majority reasoned that this Court's prior decisions *required* a "machine or transformation" as the single test for patent-eligibility of a process, art or method. Pet. App. at 12a, 16a-17a. In doing so, the Federal Circuit majority relied on descriptions in this Court's precedents, crafted in terms applicable to the technologies then at issue before the Court—such as a process that "transformed" wheat into flour—but failed to recognize these descriptions were not intended as limitations to be applied to all future technological developments. Indeed, contrary to the Federal Circuit majority's conclusion, this Court has never imposed or suggested that "machine or transformation" should be the sole test for eligibility of processes. Even in decisions relied on by the Federal Circuit majority, this Court has repeatedly denied any such rigid limitation on process eligibility. In *Parker v. Flook*, 437 U.S. 584 (1978), this Court clearly stated that "a valid process patent may issue even if it does not meet one of these qualifications [transformation or machine-implementation] of our earlier precedents." *Id.* at 589 n.9; *see also Gottschalk v. Benson*, 409 U.S. 63, 71 (1972) ("We do not hold that no process patent could ever qualify if it did not meet with the requirements of our prior precedents.").

The issue of Federal law thus presented by the decision of the Federal Circuit is not limited to so-called "business method" patents but, as stated and now applied by both the Federal Circuit and the United States Patent and Trademark Office ("USPTO"), affects *every* "process" in *every* technology, including both existing technologies and those yet-to-be-discovered. Restricting eligibility to *only* those processes that are either tied to a specific machine or that transform a material, however, minimizes incentives for development of future and potentially very valuable technologies. As a result, the Constitutional purpose of promoting the progress of science and the useful arts likely will be undermined rather than served.

Remarkably, the majority acknowledged that recent advances in technology already have "begun to challenge" the suitability of its test. Pet. App. at 17a. Technologies already impacted by the Federal Circuit's "machine or transformation" test include processes relating to computer software (not tied to a specific machine), processes relating to the administration of medicines and therapeutic treatments, and even claims to "systems" and apparatus. Circuit Judge Newman observed in her dissenting opinion that the full extent of the "impact on the future, as well as on the thousands of patents already granted, is unknown." Pet. App. at 60a (Newman, J., dissenting).

Moreover, while broadly impacting many existing and future technologies, the majority's test does little or nothing to remedy its perceived "business method" issues since the application of the test, as suggested by the majority, raises more questions than it can answer. It thus fulfills no need and adds nothing useful to the fundamental principles that deny eligibility to "laws of nature, natural phenomena and abstract ideas."

The Federal Circuit's quest for "bright-line" tests could help ease the administrative burdens of the Patent Office, and to that extent is a worthy objective. However, fashioning a new and rigid eligibility test to be applied at the very door-step of the Office is misguided and inappropriate. It upsets settled expectations with respect to numerous existing patents. It contravenes the expressed intent of Congress and conflates patent eligibility with patent worthiness. The latter issue is better dealt with by an exacting application of the conditions for patentability codified in 35 U.S.C. §§ 102, 103 and 112. Although the patent eligibility issue has been colored by public policy debates over patent quality and business methods, the answer is not to impose ill-fitting short cuts that restrict incentives for worthwhile future innovation. Instead, the answer to the need for "better patents" in all fields of endeavor is to provide the resources needed by the USPTO and require that it apply greater diligence to the task of strictly enforcing these conditions for patentability across all types of inventions.

III. ARGUMENT

A. The Federal Circuit's "Machine Or Transformation" Requirement Misinterprets This Court's Precedents

1. This Court's precedents neither hold nor suggest that, to be patent-eligible under Section 101, a process must result in a physical transformation or be tied to a machine

Relying primarily on four prior decisions of this Court – *Gottschalk v. Benson*, *Cochrane v. Deener*, *Parker v. Flook*, and *Diamond v. Diehr* – the Federal Circuit majority concluded that this Court established a definitive "machine or transformation" test for determining the patent eligibility of a claimed process under § 101. Pet. App. at 12a-13a. However, this Court's precedents offers no support for the majority's conclusion. The precedents cited by the Federal Circuit majority neither holds nor suggests that a claimed process is patent-eligible *only* if "(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing." Pet. App. at 12a.

Gottschalk v. Benson, 409 U.S. 63 (1972), does not require a process be "tied to a particular machine" or "transform a particular article into a different state or thing" to be patent-eligible. In fact, *Benson* actually *declined* to adopt a "machine or transformation" test, stating: "It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing.' We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents." *Benson*, 409 U.S. at 71.

Indeed, in *Benson*, the Court did not consider the existence – or non-existence – of a "machine-or-transformation" in evaluating the patent-eligibility of a method of programming a computer with a mathematical algorithm to convert binary-coded decimal numerals. Instead, it concluded that the claimed method did not cover patent-eligible subject matter because it would "wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself." *Benson*, 409 U.S. at 72. The Court explained that there was "no substantial practical application [for the claimed method] except in connection with a digital computer," *id.* at 71, and the claim "purported to cover any use of the claimed method in a general-purpose digital computer of any type." *Id.* at 64. Thus, based on the established principle that one cannot patent an abstract intellectual concept such as a mathematical expression, the Court held the claims in *Benson* unpatentable. *Id.* at 72.

The Federal Circuit majority's misplaced reliance on *Benson* is based primarily upon misinterpretation – and misapplication – of a single statement (made *in dicta*) in *Benson* that "[t]ransformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines." *See, e.g.*, Pet. App. at 12a. This "transformation and reduction of an article 'to a different state or thing'" language actually originated in the Court's opinion in *Cochrane v. Deener*, 94 U.S. 780 (1877). However, like *Benson*, *Cochrane* neither held nor suggested that, to be patent-eligible, a process *must* result in a physical transformation.

Instead, *Cochrane* considered whether a process for improving the qualities of superfine flour may be infringed irrespective of the physical mechanism used by the alleged infringer to effect the desired result of the process. *Id.* at 788. The patentee claimed that his invention was in the process itself, and "not limited to any special arrangement of machinery." *Id.* at 785. It was in the context of that level of technology (first separating the superfine flour and then purifying the flour-producing portions of the middling-meal prior to regrinding), and with that perspective, that

Cochrane characterized a "process" as "an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing." *Id.* at 788. Nothing in *Cochrane* suggested that, to be patent-eligible, every future "act or series of acts" *must* transform subject matter into a different state or thing.

Indeed, this Court in *Cochrane* stated the following: "That a process may be patentable, irrespective of the particular form of the instrumentalities used, cannot be disputed." 94 U.S. at 787. The "machine" branch of the "machine or transformation" test goes directly against this principle by requiring the inventor to include the particular instrumentalities in a claim to his new process.

The Federal Circuit majority's reliance on *Parker v. Flook*, 437 U.S. 584 (1978), is also misplaced. In *Flook*, the Court considered the patent-eligibility of a method for updating alarm limits used in catalytic conversion. *Flook*, 437 U.S at 585. The Court recognized that the only difference between the conventional methods and that described in the patent application was the use of a mathematical algorithm to calculate an updated alarm-limit value. *Id.* at 585-86. In response, the patent applicant argued that the presence of a claim limitation directed to "post-solution" activity – *i.e.*, subsequent adjustment of the alarm limit to the figure computed according to the claimed algorithm – distinguished the claim from one that merely defined a mathematical algorithm (like that found unpatentable in *Benson*) and thus made the process patentable. *Id.* at 590.

The Court disagreed, concluding that one cannot make patentable an inherently unpatentable process simply by including a limitation directed to "post-solution" activity – "[t]he notion that post-solution activity, no matter how conventional or obvious in itself, can transform an unpatentable principle into a patentable process exalts form over substance." *Id.* at 590. When, considered as a whole, the claim is directed essentially to an unpatentable principle, the claim is not patent-eligible.

Flook thus rejected the application in question because it was "directed essentially to a method of calculating" and sought to patent the equivalent of a fundamentally non-patentable law of nature (a mathematical formula), 437 U.S. at 595-96, *not* because it failed to tie that formula to a particular machine or failed to transform a particular article into a different state or thing. Indeed, the Court again dismissed the notion that, to be patent-eligible, a process patent must be "tied to a particular apparatus or operated to change materials to a 'different state or thing.'" *Id.* at 589 n.9 (quoting *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1877)). "As in *Benson*, [this Court] assume[d] that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents." *Flook*, 437 U.S. at 589 n.9 (citing *Benson*, 409 U.S. at 71). [2]

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[2] The Federal Circuit majority dismissed with little discussion these clear disclaimers in *Benson* and *Flook* of any categorical

Further, the Federal Circuit majority's proclamation that *Diamond v. Diehr* "once again" enunciated a definitive "machine-or-transformation" test for patent-eligibility is incorrect. *See* Pet. App. at 16a. In *Diehr*, the Court did nothing more than reiterate the teachings of both *Benson* and *Flook* in recognizing not only that a claim seeking patent protection for a mathematical formula will not be patent-eligible, but that "this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment" or by also claiming "insignificant postsolution activity." *Diehr*, 450 U.S. at 191-92 (citing to *Benson* and *Flook*). Indeed, *Diehr* confirmed that this Court's holdings in *Benson* and *Flook* "stand for no more than" that the *only* limits to patent eligibility are those processes that claim the "laws of nature, natural phenomena, and abstract ideas." *Diehr*, 450 U.S. at 185.

Thus, in evaluating the patent-eligibility of the claimed method for molding raw, uncured synthetic rubber that used a well-known mathematical equation, *Diehr* considered only whether, when taken as a whole, the claim was directed to a mathematical equation. *Id.* at 192. *Diehr* did not conclude that the claim was patent-eligible because it was tied to a particular machine

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"machine or transformation" test, characterizing them as "equivocal" or as a mere "caveat." Pet. App. at 16a. It placed great significance in the fact that these disclaimers were not expressly repeated in *Diehr*, Pet. App. at 16a-17a, but failed to recognize that a similar disclaimer was neither needed nor appropriate in *Diehr*.

or transformed a particular article into a different state or thing. Rather, *Diehr* concluded the claim was patent-eligible because what the applicant sought to patent was an industrial process for the molding of rubber products and not the mathematical formula used in that process. *Id.* at 192-93. *Diehr* thus nowhere suggests that a "machine" or "transformation" is required for a process to come within the § 101 categories of possible patentable subject matter.

2. Other precedents overlooked by the Federal Circuit confirm the absence in this Court of rigid tests under Section 101

Without any explanation, the Federal Circuit majority's opinion bypassed two important decisions of this Court – *Diamond v. Chakrabarty*, 447 U.S. 303 (1980), and *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred International, Inc.*, 534 U.S. 124 (2001) – that addressed § 101 statutory classes other than "process," but nevertheless confirmed the absence in this Court of rigid limitations on patent eligibility.

In *Chakrabarty*, the respondent's application included claims to a method of producing a new type of bacterium capable of breaking down components of crude oil (a property not possessed by naturally occurring bacteria) and claims to the genetically-engineered bacteria. 447 U.S. at 305. The patent examiner rejected the claims to the bacteria on two grounds: "(1) that micro-organisms are 'products of nature,' and (2) that as living things they are not patentable subject matter under 35 U.S.C. § 101." *Id.* at 306.

In ruling that the claimed micro-organism, although technically "alive," constituted patent-eligible subject matter, *Chakrabarty* considered – and rejected – the argument that patent eligibility should not extend to new technologies that were not foreseen and expressly authorized by Congress, such as the genetically-engineered micro-organisms then at issue. *See id.* at 314-16. The Court reasoned that "[a] rule that unanticipated inventions are without protection would [not only] conflict with the core concept of the patent law that anticipation undermines patentability," *id.* at 315-16, but would also frustrate Congress' intent in employing broad general language in § 101 – *i.e.*, that the inventions most benefiting mankind, such as "those that 'push back the frontiers of chemistry, physics, and the like,'" are generally unforeseeable. *Id.* at 316. The Court confirmed that patent eligibility should be scrutinized instead under "'the principles underlying the prohibition against patents for mere "ideas" or phenomena of nature.'" *Id.* at 315 (citation omitted).

Twenty years later, in *J.E.M. Ag Supply*, the Court again considered the scope and application of patent eligibility under § 101. Faced with the question of whether newly-engineered corn plant breeds fell within § 101, the Court specifically addressed whether eligibility should be governed by what was foreseen at the time the patent laws were drafted. Reaffirming that "the language of § 101 is extremely broad" and that "'Congress plainly contemplated that the patent laws would be given wide scope,'" 534 U.S. at 130, this Court again refused to adopt as a test for patent-eligible subject matter whether the invention was of a type expressly authorized by Congress. *Id.* at 134-35. The Court recognized that "101 ... is a dynamic provision designed to encompass new and unforeseen inventions," and that "[d]enying patent protection under § 101 simply because such coverage was thought technologically infeasible in 1930...would be inconsistent with the forward-looking perspective of the utility patent statute. As we noted in *Chakrabarty*, 'Congress employed broad general language in drafting § 101 precisely because [new types of] inventions are often unforeseeable.'" *Id.* at 135 (citation omitted).[3]

Thus, both *Chakrabarty* and *J.E.M. Ag Supply* affirm this Court's recognition of the broad scope and applicability of § 101, as well as a wise reluctance to engraft "tests" on § 101 that might limit patent eligibility to known technologies of the past and foreclose possibilities offered by new and unanticipated technology.

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[3] *Accord, Benson*, 409 U.S. at 71: "[It is not our purpose to] freeze process patents to old technologies, leaving no room for the revelations of the new, onrushing technology."

B. The Federal Circuit's Rigid "Machine Or Transformation" Test Overlooks Congress' Intent That Section 101 Have A Broad Construction

In adopting a new and unprecedented limitation on patent-eligibility, the Federal Circuit majority overlooked this Court's repeated recognition that Congress intended § 101 to have a broad construction: "[t]he subject-matter provisions of the patent law have been cast in broad terms to fulfill the constitutional and statutory goal of promoting 'the Progress of Science and the useful Arts' with all that means for the social and economic benefits envisioned by Jefferson." *Chakrabarty*, 447 U.S. at 315.

The *Chakrabarty* Court further recognized that the legislative history of § 101 supports a broad reading:

> The Patent Act of 1793, authored by Thomas Jefferson, defined statutory subject matter as "any new and useful art, machine, manufacture, or composition of matter, or any new or useful improvement [thereof]." The Act embodied Jefferson's philosophy that "ingenuity should receive a liberal encouragement." Subsequent patent statutes in 1836, 1870, and 1874 employed this same broad language.

Id. at 308-09 (citations omitted).

Further, in *Diehr*, this Court noted that the Committee Reports accompanying the 1952 Patent Act, in which Congress replaced the word "art" with the word "process," "inform us that Congress intended statutory subject matter to 'include anything under the sun that is made by man.'" *Diehr*, 450 U.S. at 182 (quoting S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H.R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952)).[4]

The Federal Circuit majority, however, never referred to or considered the Congressional intent or purpose underlying § 101. As a result, it has done exactly what this Court has repeatedly cautioned against – it has "'read into the patent laws limitations and conditions which the legislature has not expressed.'" *Chakrabarty*, 447 U.S. at 308 (quoting *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 199, 53 S.Ct. 554, 561, 77 L.Ed. 1114 (1933)). Nothing in § 101 or its legislative history supports limiting patentable "processes" to those that transform physical matter or are performed by particular machines.

In *Chakrabarty*, this Court, noting that section 101 had been "cast in broad terms," confirmed:

> Congress has performed its constitutional role in defining patentable subject matter in § 101; we perform ours in construing the language

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[4] There are, of course, legitimate, well-established limits to patent-eligible subject matter. *See* Section C, *infra*.

> Congress has employed. In so doing, our obligation is to take statutes as we find them, guided, if ambiguity appears, by the legislative history and statutory purpose. Here, we perceive no ambiguity.

447 U.S. at 315. Here, by ignoring the unambiguous language of § 101, as well as its legislative history and statutory purpose, the Federal Circuit's decision effectively removes the "any ... process" language from § 101 and effectively substitutes "only those processes that meet the 'machine or transformation' test" into the statute. Thus, its decision amounts to legislation, not interpretation, that contravenes the expressed intent of Congress.

C. This Court's Decisions Uniformly Reflect A Wise Openness, Consistent With The Congressional Intent, To New Forms Of Innovations, And Exclude Only Claims To Laws Of Nature, Natural Phenomena And Abstract Ideas

As shown by the precedents cited herein, this Court's opinions uniformly have been open to patent eligibility of new forms of innovation undreamed of at the time of *Cochrane* in 1876. *See, e.g.*, *Chakrabarty*, 447 U.S. at 309 (patentable subject matter includes "anything under the sun that is made by man") (citation omitted); *J.E.M. Ag Supply*, 534 U.S. at 135 ("Denying patent protection under § 101 simply because such coverage was thought technically infeasible [previously] would be inconsistent with the forward-looking perspective of the utility patent statute."). This Court's decisions have not excluded particular technologies, but instead have embraced even new or unusual types of processes. *See, e.g., Diehr*, 450 U.S. at 185-86 (recognizing that a process claiming a mathematical formula and a programmed digital computer is not precluded *per se* from patent eligibility).

Moreover, this Court's decisions have never treated the classes of eligible subject matter established by Congress in § 101 – *any* "process, machine, manufacture, or composition of matter" – as rigid limitations, but rather as "expansive" guideposts. *J.E.M. Ag Supply*, 534 U.S. at 130 (citing *Chakrabarty*, 447 U.S. at 308). Section 101 is thus "a dynamic provision designed to encompass new and unforeseen inventions." *J.E.M. Ag Supply*, 534 U.S. at 135.

To the extent this Court has ever refused patent eligibility, it has done so based on the facts of each case and applications of the fundamental principle that excludes from eligibility claims to "laws of nature, natural phenomena, and abstract ideas." *Diehr*, 450 U.S. at 185. Such discoveries are "'manifestations of . . . nature, free to all men and reserved exclusively to none.'" *Chakrabarty*, 447 U.S. at 309 (citation omitted). They cannot be "invented" by man, or are abstract and not "useful," and thus are excluded from patent eligibility. *Id.*; *Flook*, 437 U.S. at 589; *see also Benson*, 409 U.S. at 71.

Laws of nature, physical phenomena, and abstract ideas thus exist in the public domain for all time. *See, e.g., Diehr*, 450 U.S. at 185. An inventor is not entitled to exclusive use of one of these basic principles because to do so would remove it from the public. *Id.* Yet, this protection of the public commons does not require limits on or exclusions from the four specified categories, "process, machine, manufacture or composition of matter," of § 101. Instead, it provides guidance to the decision-maker, regardless of category, to avoid removal from the public of natural or fundamental scientific principles. In this way, the patent law navigates successfully between excessive levels of protection that may impede the further spread of useful knowledge, while also providing the necessary incentives for future innovation.

D. A New And Exclusionary "Machine Or Transformation" Test Is Not Needed

1. This Court's precedent provides sufficient guidance for determining the patent-eligibility of a process claim

There was no need for the Federal Circuit majority to formulate a rigid "machine or transformation" test for determining whether a process claim is patent-eligible. This Court's precedents provide ample guidance for determining the patent-eligibility of a process claim without requiring a "machine or transformation" test.

Indeed, the Federal Circuit majority recognized this: "Looking to [this Court's precedents in *Benson*, *Flook* and *Diehr*], we find a wealth of detailed guidance and helpful examples on how to determine the patent-eligibility of process claims." Pet. App. at 21a; *see also* Pet. App. at 10a; Pet. App. at 18a; Pet. App. at 20a-21a. Yet, without explanation, the Federal Circuit majority ignored this Court's "detailed guidance," and focused instead on a single statement (made *in dicta*) that "'[t]ransformation ... is the clue'" as the sole criteria for determining the patent-eligibility of a process claim that does not include particular machines. *See, e.g.*, Pet. App. at 12a. There was no basis – and the Federal Circuit majority offered none – for that narrow focus.

Specifically, this Court has repeatedly held that the only restriction on the patent-eligibility of a process is if it claims "laws of nature, natural phenomena, [or] abstract ideas'" because "[s]uch fundamental principles are 'part of the storehouse of knowledge of all men ... free to all men and reserved exclusively to none.'" *See* Pet. App. at 7a-8a. In applying this restriction, this Court's precedents offer numerous "criteria govern[ing] the determination ... as to whether a claim to a process ... claims only a fundamental principle." Pet. App. at 8a. The most recent articulation of these criteria occurs in *Diamond v. Diehr*, wherein this Court noted that a claim reciting a mathematical formula, scientific principle, or phenomenon of nature is not patent eligible if its application would preempt the use of that formula or scientific principle or phenomenon of nature. *Id.* at 182, 187

Diehr also clarifies that "[i]n determining the eligibility of [the] claimed process for patent protection under § 101, [the] claims must be considered as a whole," 450 U.S. at 188, rather than considered on a limitation-by limitation basis. This is consistent with the Court's additional guidance in *Diehr* that "[t]he novelty of any element or steps in a process, or even of the process itself, is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter." *Id.* at 188. Thus, "[i]t is inappropriate to dissect the claims into old and new elements and then to ignore the presence of the old elements in the analysis" in determining the patent-eligibility of the claim. *Id.* at 188.

Diehr further offers guidance that a claim directed to a mathematical formula (or scientific principle or phenomenon of nature) cannot be made patent-eligible "by attempting to limit the use of the formula [or scientific principle or phenomenon of nature] to a particular technological environment," 450 U.S. at 191, or by also including "token post-solution activity." *Id.* at 192 n. 14. This is consistent with this Court's earlier decision in *Flook*. 437 U.S. at 590 (one cannot make patentable an unpatentable process simply by including a limitation directed to "post-solution" activity – "[t]he notion that post-solution activity, no matter how conventional or obvious in itself, can transform an unpatentable principle into a patentable process exalts form over substance").

This Court's precedents thus clearly provide ample guidance for determining whether a process claim is patent-eligible. A rigid "machine or transformation" test is neither useful nor needed.

2. There is no logical connection between the "Machine Or Transformation" Test and whether a process claim is for a fundamental principle

At the outset of its opinion, the Federal Circuit identified as "[t]he true issue before us ... whether Applicants are seeking to claim a fundamental principle (such as an abstract idea) or a mental process." Pet. App. at 8a. Rather than addressing this "true issue" directly, in accordance with the principles laid down in *Benson, Flook* and *Diehr*, the Federal Circuit majority instead adopted "machine or transformation" as the sole test for the patent eligibility of a process. Pet. App. at 17a, 22a. The majority did so after it perceived some challenge in determining "whether a given claim would pre-empt all uses of a fundamental principle." Pet. App. at 12a. But the majority failed to connect its new test in any way to its "true issue": proper application of the long-established principle that excludes eligibility only when a patent claims "laws of nature, natural phenomena, [or] abstract ideas."

The Federal Circuit majority did not explain how a process that meets its "machine or transformation" test – *i.e.*, a process that is "tied to a particular machine or apparatus" or a process that "transforms a particular article into a different thing" – *necessarily* excludes "laws of nature, natural phenomena, [or] abstract ideas." The majority opinion thus never provided a logical connection between the "machine or transformation" test and this Court's principle that claims to "laws of nature, natural phenomena, and abstract ideas" are precluded from patent eligibility. Nor did the majority show that the "machine or transformation" test fills any need or gap that these established exclusions leave unfilled.

Further, the majority did nothing to demonstrate that its "machine or transformation" test avoids conflict with this Court's application of "abstract idea" principles. For example, *Flook* rejected a process claim to a mathematical "law of nature" that nevertheless was "tied" to a computer.[5] 437 U.S. at 594-595. And *Benson* rejected a process that performed a "transformation," converting BCD numerals into binary numerals by an algorithm.[6] *Benson*, 409 U.S. at 71-72. In both instances, exclusive use of the "machine or transformation" test would have found eligible patent claims that clearly were directed to *ineligible* "abstract ideas."

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[5] The Federal Circuit majority declined to provide guidelines as to the "precise contours" a "particular machine" must have, but expressly left open "whether or when recitation of a computer" will suffice. Pet. App. at 28a. This has resulted in multiple Board of Patent Appeals and Interferences ("BPAI") decisions, for example, rejecting claims reciting a general purpose computer or processor. *See Ex parte Halligan*, Appeal No. 2008-1588 (Bd. Pt. App. & Interf. Nov 24, 2008); *Ex parte Snyder*, Appeal No. 2008-4598 (Bd. Pat. App. & Interf. May 12, 2009). In addition, the lower courts have rejected the following as ineligible subject matter under § 101: (1) claims reciting a "network," an "entry means," an "identification entry means," and a "computing means" (*Every Penny Counts v. Bank of America Corp.*, C.A. No. 2:07-cv-042, 2009 U.S. Dist. LEXIS 53626, (M.D. Fla., May 27, 2009); and (2) claims reciting "a remote application entry and display device" and "remote funding source terminal devices" (*DealerTrack, Inc. v. Huber*, Case No. CV 06-2335 AG (FMOx), 2009 U.S. Dist. LEXIS 58125 (C.D. Cal. July 7, 2009).

On the other hand, rigid application of "machine or transformation" will defeat claims for ground-breaking inventions such as this Court has approved in the past. For example, in *O'Reilly v. Morse*, 56 U.S. 62 (1854), Samuel Morse's invention of the telegraph was at issue. Morse's 5th claim recited, as his invention:

> the system of signs, consisting of dots and spaces, and of dots, spaces and horizontal lines, for numerals, letters, words or sentences, substantially as herein set forth and illustrated, for telegraphic purposes.

56 U.S. at 86. The 5th claim thus did not tie its subject matter to any machine, nor did it transform any article, yet this Court rejected the challenges to that 5th claim.[7] However, if "machine or

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[6] Similarly, the Federal Circuit also confusingly left open whether information-age processes such as "business methods ... [that] involve the manipulation of even more abstract constructs such as legal obligations" qualify under its test as a "transformation" of an article to a different state. Pet. App. at 29a.

[7] While the Federal Circuit majority ignored completely the implications of this Court's approval of Morse's 5th claim, the majority also erred in implying that this Court rejected Morse's 8th claim *because* it "was not transformative or tied to any

transformation" had been the sole test, it would have defeated the 5th claim.[8]

Thus, the majority's "machine or transformation" test does not clearly delineate statutory subject matter as it has been defined by this Court. Instead, as one Federal Circuit dissenter (Rader, J.) recognized, the "machine or transformation" test does nothing more than generate more questions, such as "What form or amount of 'transformation' suffices? When is a 'representative' of a physical object sufficiently linked to that object to satisfy the transformation test? ... What link to a machine is sufficient to invoke the 'or machine' prong? Are the specific machines of *Benson* required, or can a general purpose computer qualify?" Pet. App. at 142a. Another dissenter (Mayer, J) recognized that the majority's "proposed" test "is unnecessarily complex

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particular apparatus." Pet. App. at 14a. Instead, this Court rejected the 8th claim because of its vagueness and undue breadth that exceeded the invention described in Morse's specification. 56 U.S. at 112-115. These grounds are unrelated to eligibility, remain applicable to all patents and are codified in 35 U.S.C. § 112.

[8] That Morse's 5th claim recited a "system" rather than "process" or "method" is not a basis for distinction. In applying the *Bilski* "machine or transformation" test, lower courts have interpreted "system" claims as processes for purposes of § 101 eligibility. *See Every Penny Counts v. Bank of America Corp.*, C.A. No. 2:07-cv-042, 2009 U.S. Dist. LEXIS 53626 (M.D.Fla. May 27, 2009); *see also Research Corp. Technologies, Inc. v. Microsoft Corp.*, slip op. No. CV-01-658-TUC-RCJ (D. Az. July 28, 2009), pp. 22-25 (applying *Bilski* "machine or transformation" test to apparatus claims).

and will only lead to further uncertainty regarding the scope of patentable subject matter." Pet. App. at 131a. Thus, the Federal Circuit's "machine or transformation" test not only fails to fill an existing need in the law, but raises more difficult questions than it resolves.

In particular, although arising in connection with a "business method" patent, the "machine or transformation" test sweeps across many other technologies, existing and future.[9] At the same time it provides no solution with respect even to perceived difficulties with business methods. Dissenter (Mayer, J) explained that, "as written, Bilski's claim arguably involves a physical transformation," thus conforming to the majority's "transformation" requirement. Pet. App. at 128.

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[9] Indeed, in applying the "machine or transformation" test, the BPAI has rejected claims across many other technologies for failure to claim either a "particular" machine or a transformation of physical object or substance or representation thereof. *See, e.g., Ex parte Hardwick*, Appeal No. 2009-002399 (Bd. Pt. App. & Interf. June 22, 2009) (method for synthesizing digital speech samples corresponding to a selected voicing state); *Ex parte Caputo*, Appeal No. 2008-004868 (Bd. Pt. App. & Interf. June 18, 2009) (method for generating complex waveforms and signal modulation techniques for use in communications, signal processing and manufacturing); *Ex parte Johnson*, Appeal No. 2009-000470 (Bd. Pt. App. & Interf. June 10, 2009) (method for computer-implemented network collaboration through embedded annotation and rendering instructions allowing collaborators to generate, share or transmit content over the internet with only a web browser); *Ex parte Barnes*, Appeal No. 2007-4114 (Bd. Pt. App. & Interf. Jan. 22, 2009) (method for filtering seismic discontinuity data to enhance those features that have the geometrical characteristics of a fault).

By effectively eliminating incentives to research and innovate with respect to processes not tied to a particular machine and do not necessarily transform an article to a new state, the Federal Circuit's decision has chilling effects, both immediate and potentially long-lasting, on new areas of innovation. In the current global economic climate, incentives for new technological breakthroughs should be encouraged, not discouraged. The public interest is best served if the United States patent system remains open to all forms of technological development. If it does not remain open, such developments may happen outside the U.S. patent system, and without its requirements for public disclosure and limited periods of exclusivity. Worse yet, such developments may not happen at all.

3. Solutions to overly broad patent claims exist that do not require engrafting limitations on Section 101

To the extent it may be feared that certain patents, including "business method" patents, contain overly broad claims, solutions lie (a) in this Court's precedents that, *e.g.*, refuse eligibility to "abstract ideas," and (b) in other conditions for patentability set out in the patent statute.

First, as noted above, this Court rejected the eligibility of specific inventions on the basis of the long-standing principle excluding from eligibility "laws of nature, natural phenomena and abstract ideas." Those principles have been widely followed and successfully applied by the lower courts and the PTO for many years. While the Federal Circuit majority noted the "more challenging process claims of the twenty-first century," it identified no unique challenges in applying those principles, nor any pressing need or justification for a new, more restrictive test that forecloses incentives for innovation across broad areas of technology. Pet. App. at 12a. Indeed, one dissenter, Circuit Judge Rader, would have dealt with Petitioners' application solely on the basis of whether its claims state an "abstract idea." Pet. App. at 134a, 142a.

Second, simply because an invention involves patent-*eligible* subject matter does not mean that a patent should issue. Indeed, as this Court recognized in *Diehr*, a determination that claims recite subject matter that is eligible for patent protection under § 101 does nothing to preclude a later finding that a "process is not deserving of patent protection because it fails to satisfy the statutory conditions of novelty under § 102 or nonobviousness under § 103." 450 U.S. at 191; *see Flook*, 437 U.S. at 600 (Stewart, J. and Rehnquist, J., dissenting) ("Section 101 is concerned only with subject-matter patentability. Whether a patent will actually *issue* depends upon the criteria of §§ 102 and 103, which include novelty and inventiveness, among many others.").

The legislative history is in accord, stating that "Section 101 sets forth the subject matter that can be patented, 'subject to the [other] conditions and requirements of this title.'" *Diehr*, 450 U.S. at 190 (quoting S. Rep. No. 1979, 82d Cong., 2d Sess., 5

(1952)). As also recognized by one *Bilski* dissenter, "the Patent Act from its inception focused patentability on the specific characteristics of the claimed invention-its novelty and utility-not on its particular subject matter category .... Specifically, section 101 itself distinguishes patent eligibility from the conditions of patentability-providing generously for patent eligibility, but noting that patentability requires substantially more." Pet. App. at 135a-136a (Rader, J. dissenting).

Rather than imposing a rigid test on § 101 that threatens the eligibility of new technologies, questions of whether a given advance is patentworthy are better dealt with by application of sections 102 (requiring novelty), 103 (requiring nonobviousness) and 112 (requiring that the invention defined by the claims be "enabled" and that it be distinctly claimed). *See, e.g., KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 415 (2007). As one *Bilski* dissenter noted (Rader, J.), "[t]hese statutory conditions and requirements better serve the function of screening out unpatentable inventions than some vague 'transformation' or 'proper machine link' test." Pet. App. at 142a.

The Federal Circuit's rigid approach to subject matter eligibility undercuts this Court's precedents by prematurely foreclosing any additional inquiry into patentability and/or individual worthiness of the particular innovation, *i.e.*, whether it is new, nonobvious, useful, and whether it is properly described and defined. This not only upsets the Congressional intent, but threatens incentives to produce valuable and unforeseeable future innovations.

E. Any Changes In The Broad Scope Of Section 101 Should Be Left To Congress

When the Constitution was written, the Framers wisely authorized a patent system that would provide incentives for innovations in the "useful arts," but they could not have foreseen the myriad developments and discoveries that would occur over the following centuries. Thus, the Framers left it to Congress to determine, and to modify, as events necessitated, the types or classes of things that could be the subject of an exclusive right. Congress, of course, has broad powers to initiate investigations, hold hearings, gain insights from interested parties from a broad range of technologies, and ultimately to determine the proper balance and need, if any, for new limitations on patent eligibility.

This Court has consistently recognized both the constitutional authority of Congress, *Chakrabarty*, 447 U.S. at 315 ("It is, of course, correct that Congress, not the courts, must define the limits of patentability..."), as well as the greater resources available to Congress to make such policy choices. *Id.* at 317 ("the kind of investigation, examination, and study that legislative bodies can provide and courts cannot").

In construing § 101, this Court has frequently noted the dangers of reading in limitations to patent eligibility not expressly authorized by Congress.

> [W]e have more than once cautioned that "courts 'should not read into the patent laws limitations and conditions which the legislature has not expressed.'" *Diamond v. Chakrabarty, supra*, at 308, 100 S.Ct., at 2207, quoting *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 199, 53 S.Ct. 554, 561, 77 L.Ed. 1114 (1933).

Diehr, 450 U.S. at 182. Such deference is wise, and has served the public interest by allowing the patent system to remain dynamic and able to accommodate new forms of innovation. Consideration of whether any limitations or conditions should be added to § 101 should continue to be left to Congress.

CONCLUSION

The AIPLA respectfully requests that this Court reverse the *en banc* decision of the Federal Circuit, reject that court's "machine or transformation" test and affirm that patent eligibility for "processes" remains as expressed by this Court in *Diehr* and the Court's similar precedents.

Respectfully submitted,

WILLIAM K. WEST, JR.
Counsel of Record
PAMELA S. KANE
MICHAEL J. STIMSON
1299 Pennsylvania Ave., NW
Washington, D.C. 20004
(202) 783-0800

TERRY STANEK REA
PRESIDENT
AMERICAN INTELLECTUAL
PROPERTY LAW ASSOCIATION
241 18th Street, S., Suite 700
(703) 415-0780

Attorneys for *Amicus Curiae*
American Intellectual Property
Law Association

August 6, 2009

AMICUS
CURIAE
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In the Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

DAVID J. KAPPOS, UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR, UNITED STATES PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari to the
United States Court of Appeals for the Federal Circuit

BRIEF OF *AMICI CURIAE* AMERICAN MEDICAL ASSOCIATION, THE AMERICAN COLLEGE OF MEDICAL GENETICS, THE AMERICAN SOCIETY OF HUMAN GENETICS, THE ASSOCIATION OF PROFESSORS OF HUMAN AND MEDICAL GENETICS, AND MAYO CLINIC IN SUPPORT OF RESPONDENTS

JONATHAN SINGER
JOHN DRAGSETH
Fish & Richardson P.C.
60 South 6th Street, Suite 3300
Minneapolis, MN 55402
(612) 335-5070

Attorneys for Mayo Clinic

KATHERINE STRANDBURG
Counsel of Record
New York University
School of Law
245 Sullivan Street
New York, NY 10012
(212) 998-6269

Attorney for Amici Curiae

TC+TA
53BGC

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INTEREST OF THE *AMICI CURIAE* [1]

A basic tenet of medical ethics is that discoveries and advances in medical care should be shared freely and disseminated openly. This ethical principle makes such discoveries readily available for use in the diagnosis and treatment of patients, and facilitates the study and improvement of such discoveries. It also allows physicians to fulfill their fundamental obligation to meet the needs of their patients.

For more than 200 years, the patent laws have, with few exceptions, existed in harmony with the professional ethical duty to disseminate and use medical advances. *Amici* join with the government in appealing from the non-medical decision below because the Federal Circuit has more recently used its "machine or transformation" test to approve patents that cover physicians' mental impressions, in *Prometheus Laboratories, Inc. v. Mayo Collaborative Services*, 2009 WL 2950232 (Fed. Cir. Sept. 16, 2009). The ruling directly conflicts with that ethical duty and with this Court's case law.

The claims of the patents in *Prometheus* are effectively identical to the claims that three Justices of this Court found to be clearly invalid in *Laboratory Corp. of America Holdings v. Metabolite Laborato-*

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[1] Counsel for the parties have consented in writing to the filing of this brief, and their letters of consent have been filed with the Clerk. Pursuant to Rule 37.6, no counsel for either party had any role in authoring this brief in whole or in part, and no party other than the named *Amici* has made any monetary contribution toward the preparation and submission of this brief.

ries, Inc., 548 U.S. 124, 135 (2006) ("*Labcorp*"). (The other six Justices felt that certiorari had been improvidently granted.) Specifically, the claims recite processes that comprise testing a patient in a particular way (sometimes after giving the patient a drug), and then identifying, in a physician's head, a correlation between the patient's test data and the patient's health. Under the Prometheus and Labcorp patents, it does not matter what the physician does after that—she is an infringer as soon as she makes the mental correlation between the test results and the patient's health. Rather than invalidating the claims by relying on the rationale in *Labcorp* and the precedent it cited, the Federal Circuit in *Prometheus* used its own "machine or transformation" test to find the claims valid, and dismissed the opinion of the *Labcorp* Justices as nonbinding.

The scope of patentable subject matter is quite broad, and can give rights over a new drug, a new diagnostic test, or even a new method of diagnosing a particular disease. But it does not extend to a physician's consideration of a scientific fact. A claim so broad would preempt the physician from doing anything with the knowledge. Once recognized, the scientific fact cannot, and should not, be ignored the physician. It should be used in the diagnosis and treatment of patients. What the physician learns from it should be publicized so as to advance medical science. Of course, if the basic fact that certain test results correlate with a given physical condition were to be incorporated into some useful application, then that application might be a patentable advance over prior art. But the fact of the correlation alone is not.

If construed too broadly, Section 101 blocks the spread of medical knowledge, creates unfair monopolies, harms patients, and drives up the cost of healthcare. Properly construed, it allows a physician to think about the relationship between a test result and a patient's physical condition.

On behalf of hundreds of thousands of members nationwide, the medical organizations that submit this brief urge the Court to enforce proper limitations on patentability under Section 101.

* * *

The American Medical Association (AMA) is a private, voluntary non-profit organization of 240,000 physicians and medical students, who practice in all states and all fields of medical specialization. The AMA was founded in 1847 to promote the science and art of medicine and the betterment of public health. From its inception, the AMA has maintained a Code of Medical Ethics, including a set of core Principles and Opinions applying those Principles. The Code of Medical Ethics has been cited by ethicists, legal scholars and courts of law, including, on numerous occasions, this Court. Several of the Ethical Opinions, as well as reports of the AMA's Council on Ethical and Judicial Affairs, address ethical issues raised by the issuance of patents on medically useful information. The AMA has issued numerous statements regarding the need to avoid having patents interfere with appropriate medical care and the development of better medical treatments and technologies.

The American College of Medical Genetics (ACMG) is a private, nonprofit, voluntary organization of clinical and laboratory geneticists. The Fellows of the ACMG are doctoral level medical geneticists and other physicians involved in the practice of medical genetics. With more than 1300 members, the ACMG's mission is to improve health through the practice of Medical Genetics. In order to fulfill this mission, the ACMG strives to I) define and promote excellence in medical genetics practice and the integration of translational research into practice; 2) promote and provide medical genetics education; 3) increase access to medical genetics services and integrate genetics into patient care; and 4) advocate for and represent providers of medical genetics services and their patients. The position of the ACMG is that observations of naturally occurring correlations should not, in and of themselves, be patentable.

The American Society of Human Genetics (ASHG), founded in 1948, is the primary professional membership organization for human genetics specialists worldwide. It is a private, non-profit organization. The Society's nearly 8000 members include researchers, academicians, clinicians, laboratory practice professionals, genetic counselors, nurses, and others who have a special interest in the field of human genetics. ASHG serves research scientists, health professionals, and the public by providing forums to: (1) share research results at annual meetings and in The American Journal of Human Genetics; (2) advance genetic research by advocating for research support; (3) enhance genetics education by preparing future professionals and informing the public; and (4) promote genetic services and support responsible social and scientific policies.

The Association of American Medical Colleges (AAMC) is a non-profit organization representing all 129 allopathic medical schools in the United States, about 400 major teaching hospitals and health systems, and about 90 academic and professional societies representing nearly 110,000 faculty members. AAMC's member institutions are at the forefront of medical education, research and research training, and health care innovation and delivery. AAMC members perform nearly 55% of the extramural research sponsored by the National Institutes of Health, and they partner with industry in discovering new and better approaches to the diagnosis, treatment, and prevention of human diseases. The AAMC is committed to the continuing improvement of health care and the Continuing Medical Education of physician practitioners based on sound scientific evidence.

The Association of Professors of Human and Medical Genetics (APHMG) is a non-profit organization that promotes human and medical genetics educational programs in North American medical and graduate schools. Currently more than 90 medical and graduate schools are members. The APHMG represents the faculty that teach human and medical genetics to virtually all medical students in North America. As educators, they teach medical students to think about, diagnose and treat genetic diseases. It is the APHMG's position that all physicians must be free to think broadly, creatively, analytically and without fear that they risk infringing a patent merely by thinking about the relationship between certain treatments and their potential metabolic and clinical sequelae.

The Association for Molecular Pathology (AMP) is an international medical professional association representing approximately 1,600 physicians, doctoral scientists, and medical technologists who perform laboratory testing based on knowledge derived from molecular biology, genetics, and genomics. The AMP is dedicated to the development and implementation of molecular diagnostic testing, which includes genetic testing in all its definitions, in a manner consistent with the highest standards established by CLIA, CAP, the ACMG, and the FDA. AMP members practice their specialty in widely diverse settings, including academic medical centers, independent medical laboratories, community hospitals,federal and state health laboratories, and the in vitro diagnostic industry, and are involved in every aspect of molecular diagnostic testing. AMP provides national leadership for the advancement of safe and effective practice and education for molecular diagnostic testing.

The College of American Pathologists (CAP) has nearly 17,000 physician members, including most of the eligible board-certified pathologists. It is the world's largest medical society composed exclusively of pathologists, who are physicians who obtain and interpret data as the result of examination of tissues, blood, and other body fluids for diagnosis and patient care. The CAP also serves the laboratory community throughout the world. More than 6,000 laboratories are accredited by the CAP, and approximately 23,000 laboratories are enrolled in the College's proficiency testing programs.

The Mayo Clinic ("Mayo") is a charitable, non-profit corporation based in Rochester, Minnesota. Mayo is the first and largest integrated, not-for-profit group practice in the world. Doctors from every medical specialty work together to care for patients, joined by common systems and a philosophy of "the needs of the patient come first." More than 3,300 physicians, scientists and researchers and 46,000 allied health staff work at Mayo, which has sites in Rochester, Minn., Jacksonville, Fla., and Scottsdale/Phoenix, Ariz. Collectively, the three locations treat more than half a million people each year. In addition to an integrated clinical practice, Mayo meets the needs of patients through extensive education and research activities. The Mayo Clinic Rochester and Mayo Collaborative Services (d/b/a Mayo Medical Laboratories), of which the Mayo Clinic is a parent, are the named defendants in the *Prometheus* lawsuit.

SUMMARY OF THE ARGUMENT

Under this Court's precedent, a patent claim cannot be valid if it would preempt use of a fundamental scientific principle or natural phenomenon. Just as the Federal Circuit's "machine or transformation" test might help indicate whether an invention is a "technology" that can the subject of a patent, it can also be helpful in determining whether the preemption standard is met. But the "machine or transformation" test must remain secondary and cannot supplant this Court's requirement that a claim address a technology, or the Court's preemption standard. Bilski's claims should be held unpatentable, not because they fail to use a machine or make a physical transformation, but because their lack of machine or transformation indicates that they do not involve what has traditionally been considered to be patentable subject matter. Likewise, when applied to patents that relate to medical treatment, the preemption standard prevents patentees from attempting to cover every possible application of a scientific observation, and requires them to limit their claims to a particular new and useful application or use of the observation.

It is important that this Court speak so that the Patent Office does not issue overreaching claims in the life sciences, and lower courts understand that they may not uphold patents whose claims impede the practice of medicine by prohibiting physicians from making their own observations of biological processes. Such patent claims undermine the ability of physicians to make informed treatment decisions based on the latest scientific knowledge, stifle innovation, and increase the cost and decrease the quality of treatment for serious diseases. Such patents chill research, and patents such as those in *Labcorp* and *Prometheus* chill talking and thinking of ideas by making talking and thinking into a tort.

ARGUMENT

I. The Federal Circuit's "Machine or Transformation" Test Must Be Applied Properly

The claims in this appeal are unpatentable, as the government points out in its brief, because they fall well outside the limits that Congress and the Court have placed on patentability. In particular, the Bilski claims are not directed to "technology," which can be seen in part by their failure to use a particular machine or apparatus, or effect a transformation of subject matter. The absence of a machine or transformation is instructive in this case, but should not be determinative, and its relevance must be allowed to vary with each particular case. The outcome must be driven instead by more fundamental, historical standards of patentability.

Just as "machine or transformation" is merely one test to help determine whether an invention is directed to "technology," it also cannot trump long-applied limits against patent claims that try to preempt the use of fundamental principles—like those at play in *Labcorp* and *Prometheus*. For example, the recognition that the earth revolves around the sun cannot itself be patented, whether the recognition was made through mental deduction or with the use of a specific model of computer. Nor could the recognition of DNA's double helix structure be patented, even if the discoverers had to perform numerous chemical transformations of a DNA sample to recognize it.

Both processes—which undoubtedly have particular machines and/or transformations that are core to their execution—are unpatentable if they are not limited to some particular application of the principle, because they would cover, and thus "preempt," every possible implementation that could come from recognizing the fundamental principle. *See Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972).

The Federal Circuit, however, has elevated its *Bilski* "machine or transformation" test into the fundamental standard for patentability. Specifically, in *Prometheus*, the court decided that the "transformation," for certain of the patent claims, was the natural change that occurs to human blood when it is tested. 2009 WL 2950232, at *8-9. That minimal transformation should not have carried the day, because the claims were all fully preemptive—i.e., they covered a physician's observation of a correlation in test data, and thus prevented the physician from doing ***anything*** with that observation. The Federal Circuit, however, validated the claims, noting that "machine or transformation" drove the result:

> The proper inquiry under § 101 is whether these methods meet the Supreme Court's machine or transformation test articulated in *Benson* and *Diehr*, and applied in *Bilski*, and, if so, whether the machine or transformation is central to the purpose of the claims.

Id. at *8. The court then made clear that it believed its "machine or transformation" test was the determinant of preemption, and not simply a helpful indicator:

> [B]ecause the [Prometheus] claims meet the machine-or-transformation test, they do not preempt a fundamental principle.

Id.

Such a stretched reading "transformation" fails to take into account this Court's historical holdings that "[p]henomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work." *Bilski*, 545 F.3d at 952, *citing Benson*, 409 U.S. at 67. Rather, "[i]f there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end." *Funk Brothers v. Kalo*, 333

U.S. 127, 130 (1948). Even if a natural process, such as photosynthesis or digestion, involves the transformation of matter, it remains "the handiwork of nature" and is not patentable. *Id.* at 131. And even if an observation of a fundamental principle requires some sort of preparatory transformation, a party cannot claim such an observation.

Under this Court's own case law, the presence of a machine or transformation in a patent claim has not necessarily indicated whether the patentee is attempting to cover a real-world application of a general principle or instead trying to preempt all uses of the principle. For example, the patentee in *Diamond v. Diehr* limited its claims to using the Arrhenius equation in order to open or close an injection mold, and the Court found the claims valid, 447 U.S. 175, 187 (1981). But a machine's presence, even in the middle of an invention, does not always prevent preemption. In *Parker v. Flook*, for example, the invention involved computing alarm limits with a machine, but was not limited with respect to how the limits were ultimately applied, and the claims were held invalid, 437 U.S. 584, 594-95 (1978).

The Prometheus claims are like those in *Flook*, and unlike those in *Diehr*. They recite recognizing a particular natural result (the metabolization level of certain chemicals in a human body), and are open to any use of that recognition. They thus preempt all uses. In fact, although the Prometheus patents are directed to gastrointestinal disorders, Prometheus accused a Mayo physician even though she was conducting dermatology research. In Prometheus' view, it did not matter what she intended to do with her knowledge because the Prometheus patents cover ***all*** uses of the knowledge.[2] Despite this, the Federal Circuit assumed that the presence of certain chemical reactions *ipso facto* meant that the Prometheus claims could not be preemptive, when in fact it should have used those tests only as an aid to determine whether the claims were preemptive.

The Federal Circuit's application of its *Bilski* test in *Prometheus* also puts its cross-wise with the reasoning of Justices Breyer, Stevens, and Souter in their dissent from dismissal of the writ as improvidently granted in *Labcorp*. There, the claims again ended with a physician recognizing a correlation between an elevated level of a certain chemical in the blood and a patient's health. 548 U.S. at 134-35. In writing at length on the issue, Justice Breyer noted that the case was "not at the boundary," because it was nothing more than "an instruction to read some numbers in light of medical technology." *Id.* at 135. The Prometheus claims have the same problems, even though they deal with other chemicals and sicknesses, so the *Labcorp* analysis was properly central to the district court's opinion in *Prometheus*. *See Prometheus Labs., Inc. v. Mayo Collaborative Servs.*, 2008 WL 878910 (S.D. Cal. Mar. 28, 2008). But the Federal Circuit dismissed the Justices' reasoning in a footnote and without analysis:

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[2] Such an interpretation also would unnecessarily bring the patent laws into conflict with the First Amendment, as the ACLU pointed out in its brief *amicus curiae* in the Federal Circuit in this case. *See* http://www.aclu.org/pdfs/freespeech/in_re_bilski_aclu_amicus.pdf.

> That dissent is not controlling law and also involved different claims from the ones at issue here.

2009 WL 2950232, at *8 n.3.

The Federal Circuit's radical expansion of Section 101 in *Prometheus*, with nary a nod to this Court's precedent or the *Labcorp* Justices' reasoning, highlights that the "machine or transformation" test, whatever its value, needs to be better defined as a helpful tool, but not a determinant of more general standards for patentability.

II. Public Policy is Well Served by Current Limits on Patentable Subject Matter, Which Preclude Patenting Scientific Data

The *amici* recognize that healthcare-related patents can enhance the provision of high-quality and cost-effective medical care. The financial incentive offered by patents supports the expensive and uncertain research required to identify, test, and gain approval for products such as new pharmaceuticals, medical devices, and diagnostic testing kits. In this respect, the patent system has served patients and the medical profession well.

Patents on basic scientific principles underlying medical care, however, undermine these salutary effects. Such patents raise ethical concerns for physicians, threaten to stifle innovation and raise the costs of medical treatment, and erode the quality of patient care by limiting the knowledge physicians may use to diagnose and treat their patients.

1. Patents on Scientific Principles Raise Ethical Concerns for Physicians

Physicians have longstanding ethical obligations to advance and share useful medical knowledge with patients and physicians. Principle V of the AMA's Principles of Medical Ethics states that a "physician shall continue to study, apply and advance scientific knowledge," and "make relevant information available to patients, colleagues, and the public."[3] Opinion 9.08 of the Code of Medical Ethics of the AMA elaborates upon this basic principle:

> Physicians have an obligation to share their knowledge and skills and to report the results of clinical and laboratory research. . . . The intentional withholding of new medical knowledge, skills and techniques from colleagues for reasons of personal gain is detrimental to the medical profession and to society and is to be condemned.[4]

Discovery of a basic scientific principle that could be useful to others in devising medical applications or to physicians in diagnosing and treating patients is a quintessential example of the kind of medical knowledge that physicians are obliged to share freely. To interpret the patent laws to make scientific principles eligible for patent protection threatens to undermine, rather than promote, the ethical practice of medicine.

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[3] Available at www.ama-assn.org/ama/pub/category/2512.html (last visited April 5, 2009).

[4] Available at http://www.ama-assn.org/ama1/pub/upload/mm/369/ceja_3i07.pdf (last visited April 5, 2009)

2. Patents Solely on Scientific Facts Threaten to Stifle Innovation, Including the Development of Personalized Medicine, and to Increase Health Care Costs

Basic scientific facts "are part of the storehouse of knowledge of all men." *Funk Bros.*, 333 U.S. at 130. Ensuring wide dissemination and free access to such facts is essential to scientific progress. The patentees in *Labcorp* and *Prometheus* are neither the first nor the last to consider the implications of particular blood chemical levels in relation to human health. Ready access to basic facts, such as a relationship between levels of drug metabolite and the drug's efficacy and toxicity, are essential to important, ongoing research efforts. Exclusive rights to scientific facts hinder efforts to develop or employ new and superior medical advances that would build on them.

Disclosure of such correlations creates incentives for laboratories, such as Mayo's, to compete to develop fast and inexpensive ways of testing and for researchers to study similar correlations. But a patent that covers mere physician recognition of a test result may "shut[] the door" to the development or use of such new tests, and discourage further research and development. *O'Reilly v. Morse*, 56 U.S. 62, 113 (1853).[5]

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[5] The great weight of academic research confirms that allowing patents to preempt important fields like medical diagnosis by monopolizing biological laws would inflate health care costs while simultaneously retarding (rather than promoting) innovation. *See* M. Boldrin & D. Levine, *Against Intellectual Monopoly* 73-77, 89-92, 184-187, 214-218, 238, 246

3. Patents on Scientific Principles Erode Physicians' Ability to Provide Quality Patient Care

Patent claims like those in *Labcorp* and *Prometheus* conflict with physicians' ability to provide effective patient care. A physician cannot design around a scientific principle to avoid infringement. A physician who learns—from the medical literature, colleagues, continuing medical education, or elsewhere—of some patented correlation cannot put that

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(Cambridge 2009) (describing dramatic increase in grants of patents over last decade resulting in a "patent thicket" harmful to innovation); Torrance & Tomlinson, *Patents and the Regress of Useful Arts*, 10 Colum. Sci. & Tech. L. Rev. 130, 138, 162-167 (2009) (collecting economic research showing lack of stimulus to innovation); Landes & Posner, *The Economic Structure of Intellectual Property Law* 305-306 (2003) (patent monopolies on "scientific principles" threaten "enormous potential for rent seeking" and "enormous transaction costs that would be imposed on would-be users"); L. Branstetter, *Do Stronger Patents Induce More Local Innovation?*, 7 J. Int'l Econ. L. 359 (2004) (finding absence of innovation benefits from expanded patent monopolies; despite "reasonably well structured research projects conducted by competent scholars," studies "failed to find them in most contexts"); F. Knight, *Risk, Uncertainty and Profit* 372 (1921). At a minimum, at a time of heightened national concern over health care cost and quality, this research shows "that a heavy burden of persuasion should be placed upon those who would extend such protection." S. Breyer, *The Uneasy Case for Copyright*, 84 Harv. L. Rev. 281, 322-323 (1970) (citing research in patent and copyright fields).

knowledge out of mind. Thomas Jefferson aptly described this characteristic of ideas:

> If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of every one, and the receiver cannot dispossess himself of it.

L. Lessig, *The Future of Ideas: The Fate of the Commons in a Connected World* 94 (2001). Such is the nature of scientific fact; once known, it must be considered. Quality patient care demands that a physician consider test results in light of, among other things, current medical knowledge.

Granting exclusive rights to the mere consideration of scientific facts concerning medical diagnosis and treatment would distort patent law beyond recognition. By discovering a previously unknown correlation between obesity and illness, for example, a researcher could obtain a patent on the process of having a patient step on a scale, measuring a weight above a particular statistically significant value, and then thinking about whether to recommend that the patient diet to lose weight. Any entity that made or sold scales, and that dared to mention that correlation in a brochure, might then be liable for intentionally inducing infringement. Such a result is unthinkable. In the context of patient testing, a patentee could block a competitor from developing a test that is superior to, and wholly different from, the patentee's test because the patentee would have a monopoly on the fundamental concept at the center any test. As a result, such patents not only drive up costs to patients, but also lower the quality of patient care.

Justice Breyer, in *Labcorp*, well expressed the potential dangers of giving such sweeping rights in heretofore unpatentable subject matter:

> If I am correct in my conclusion in Part III that the patent is invalid, then special public interest considerations reinforce my view that we should decide this case. To fail to do so threatens to leave the medical profession subject to the restrictions imposed by this individual patent and others of its kind. Those restrictions may inhibit doctors from using their best medical judgment; they may force doctors to spend unnecessary time and energy to enter into license agreements; they may divert resources from the medical task of health care to the legal task of searching patent files for similar simple correlations; they may raise the cost of healthcare while inhibiting its effective delivery.

548 U.S. at 138. These negative effects are bound to ensue from the Federal Circuit's interpretation of the "machine or transformation" test in *Prometheus*.

CONCLUSION

For the foregoing reasons, *Amici* support the conclusion of the Federal Circuit, but caution that the "machine or transformation" test not be allowed to override the Court's traditional standards for patentable subject matter.[6]

Respectfully submitted,

JONATHAN SINGER
JOHN DRAGSETH
Fish & Richardson P.C.
60 South 6th Street –
Suite 3300
Minneapolis, MN 55402
(612)335-5070

Attorneys for Mayo Clinic

KATHERINE STRANDBURG
Counsel of Record
New York University School
of Law
245 Sullivan Street
New York, New York 20001
(212)998-6269

Attorney for Amici Curiae

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[6] Mayo intends to file its petition for certiorari in the *Prometheus* case in October 2009. The petition will raise the same Section 101 issues that this Court was unable to resolve for lack of proper issue preservation in *Labcorp*, 548 U.S. at 125 (Breyer, J. dissenting from dismissal of petition). Mayo properly preserved the issues in *Prometheus*, and the Federal Circuit actually decided them. That case thus presents an appropriate vehicle to resolve the important questions left unresolved in *Labcorp*.

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CURIAE
BRIEF

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No. 08-964

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IN THE
Supreme Court of the United States

BERNARD L. BILSKI and RAND A. WARSAW,
Petitioners,
v.
JOHN DOLL, Acting Under Secretary of Commerce for Intellectual Property and Acting Director, Patent and Trademark Office,
Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF AMICI CURIAE ASSOCIATION INTERNATIONALE POUR LA PROTECTION DE LA PROPRIETE INTELLECTUELLE AND INTERNATIONAL ASSOCIATION FOR THE PROTECTION OF INTELLECTUAL PROPERTY (U.S.) IN SUPPORT OF REVERSAL

JUDITH M. SAFFER
President
INTERNATIONAL ASSOCIATION FOR THE PROTECTION OF INTELLECTUAL PROPERTY (U.S.)
Broadcast Music, Inc.
320 W. 57th Street
New York, NY 10019

R. MARK HALLIGAN
Counsel of Record
WILLIAM D. PEGG
DAVID C. MCKONE
NIXON PEABODY, LLP
300 S. Riverside Plaza
Chicago, IL 60606
(312) 425-8657

MARC KAUFMAN
NIXON PEABODY LLP
401 9th Street, N.W.
Washington, DC 20004

Counsel for Amici Curiae

BOTH . 4XD2TP

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Vienna Convention on the Law of Treaties, UN Doc. A/Conf.39/27; 1155 UNTS 331; 8 I.L.M. 679 (1969) 12

OTHER MATERIALS *Page*

James Rogan, U.S. Under Sec'y of Com. for Intell. Prop. and Dir. of U.S. Pat. & Trademark Office, *Remarks at the Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy* (Feb. 6, 2002), http://www.ftc.gov/opp/intellect/rogan.shtm 4

I. INTEREST OF AMICI CURIAE[1]

This brief is submitted on behalf of *amici curiae* Association Internationale Pour la Protection de la Propriete Intellectuelle ("AIPPI") and International Association For The Protection Of Intellectual Property – United States ("AIPPI-US")(hereinafter referred to collectively as "AIPPI").

AIPPI is an international organization, founded in 1897, dedicated to the development, improvement, and legal protection of intellectual property. AIPPI is a politically neutral, non-profit organization headquartered in Switzerland having over 9000 members representing over 100 countries and operating mainly through National Groups, such as the AIPPI-US.

The members of AIPPI include intellectual property lawyers, patent and trademark attorneys, and patent agents in corporate and private practice throughout the world, as well as academics and other persons interested in intellectual property, and including members from North America, South America, Europe, Asia, Australia and Africa.

The primary goals of AIPPI, in accord with its implementing statutes and regulations, are to promote the protection of intellectual property on a national and international basis and to study and compare existing laws and proposed new laws to propose improvements thereto. AIPPI pursues these objectives, in part, by working for the development, expansion and improvement of international and regional treaties and agreements and also of national laws relating to intellectual property. In its long history, AIPPI has adopted more than 700 Resolutions and Reports. An AIPPI "Resolution" is a Statement of Policy regarding a specific Intellectual Property issue, approved by the collective country members of AIPPI. Such a Resolution is issued only after lengthy study and discussion and subsequent vote by a majority of delegates present at an Annual Meeting of the Executive Committee of AIPPI. The presentation of these Resolutions and Reports to international Governmental Organizations, in particular the World Intellectual Property Organization ("WIPO"), has contributed considerably to the development, improvement and harmonization of the international protection of intellectual property. AIPPI has adopted two Resolutions on issues touching those before this Court: Resolution Q133 ("Patenting of computer software") and Resolution Q158 ("Patentability of Business Methods"), discussed below and attached hereto.

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[1] The parties have consented to the filing of this brief. No counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than the Amici has made a monetary contribution to the preparation or submission of this brief.

For at least the above-noted reasons, and on behalf of both resident and non-resident AIPPI members who seek patent protection in the United States for inventors they represent, AIPPI submits this brief to this Court.

II. INTRODUCTION

The framers of the United States Constitution recognized the need to encourage innovation, and dissemination of the same, by rewarding inventors and granted the U.S. Congress the authority "[t]o promote the Progress of . . . useful Arts, by securing for limited Times to . . . Inventors the exclusive Right to their . . . Discoveries." U.S. Const. art. I, § 8, cl. 8. Congress enacted the first United States Patent Act in 1790 requiring, *inter alia*, the applicant to "have invented or discovered any useful art, manufacture, engine, machine, or device, or any improvement therein." Act of April 10, 1790, ch. 7, § 1, 1 Stat. 109. Congress amended this Act in 1793 to require that the applicant "have invented any new and useful art, machine, manufacture or composition of matter, or any new and useful improvement." Act of February 21, 1793, ch. 11, § 1, 1 Stat. 318. In the revisions to Patent Act of 1952, Congress amended the language of 35 U.S.C. § 101 to use the term "process,"[2] in lieu of "art," stating: "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." The Patent Act of 1952 further required the subject matter of the invention to be novel (*see* 35 U.S.C. § 102), to be non-obvious (*see* 35 U.S.C. § 103), and to satisfy certain disclosure requirements (*see* 35 U.S.C. § 112).

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[2] The new use of the term "process" did not alter the scope of patent eligibility over processes because "[i]n the language of the patent law, [a process] is an art." *Diamond v. Diehr*, 450 U.S. 175, 182-84 (1981). 35 U.S.C. § 100(b) defines "process" to mean "process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material."

The Court has made the threshold determination of patent-eligible subject matter using a broad and flexible analysis, permitting accommodation of new areas of innovation. *See generally Gottschalk v. Benson*, 409 U.S. 63 (1972); *Parker v. Flook,* 437 U.S. 584 (1978); *Diamond v. Chakrabarty,* 447 U.S. 303 (1980); *Diamond v. Diehr,* 450 U.S. 175 (1981). The United States has been historically, and remains currently, a leader in innovation. Manufacturing, chemistry, electronics, biotechnology, and computer software are just a few of the technological fields that have seen tremendous commercial development within the United States. The Court's flexible determination of patent eligible subject matter has accommodated and fostered innovation in and development of all of these technologies, and has helped the United States to maintain its position in the global economy, despite a waning manufacturing base.[3]

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[3] *See, e.g.,* James Rogan, U.S. Under Sec'y of Com. for Intell. Prop. and Dir. of U.S. Pat. & Trademark Office, *Remarks at the Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy* (Feb. 6, 2002), http://www.ftc.gov/opp/intellect/rogan.shtm:

> Another development has been the expansion of the subject matter of patents. Whenever new technologies are presented for patenting, such as with microorganisms or computer software, the entry of patent law into these areas was greeted with predictions of disaster. Yet today

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The United States Court of Appeals for the Federal Circuit ("Federal Circuit"), in its *en banc* decision in *In re Bilski,* 545 F.3d 943 (Fed. Cir. 2008) (*en banc*), and in its development therein of a rigid, bright-line test for determining patent-eligible subject matter, has taken a step that will, if left unchecked, limit innovation in important areas of technology, such as information technology. The Federal Circuit has insisted that its "machine or transformation" test articulated in *Bilski* is the only test for determining if a process is patent eligible. *See In re Ferguson,* 558 F.3d 1359 (Fed. Cir. 2009). The Federal Circuit's "machine or transformation" test requires that a process must be tied to a machine or transform an article from one physical state to another. *See Bilski,* 545 F.3d at 954. Although perhaps capturing helpful insights into aspects of this Court's jurisprudence concerning statutory subject matter, the exclusive use of the inflexible "machine or transformation" test is antithetical to innovation in the information age and will limit the ability of the United States patent

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> the United States is the international leader in these and all other technological areas.
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> In short, over the past two decades the value of patents as business portfolio assets has increased, their validity has become more predictable, and the areas in which patents could be obtained have expanded. Each of these developments enhances the usefulness of patent law as a motivator for innovation.

system to accommodate both developing and new technologies.

This Brief attempts to serve the Court by providing both a global perspective on the issue of patent-eligible subject matter, and a commentary on why the Federal Circuit erred in holding that a "process" must either be tied to a particular machine or apparatus or transform a particular article into a different state or thing to be eligible for patenting under 35 U.S.C. § 101.

III. SUMMARY OF THE ARGUMENT

AIPPI's mandate is to study the way patent systems around the world protect intellectual property and make recommendations for improvement. To this end, AIPPI has studied how the major patent systems around the world address the threshold issue of what constitutes patent-eligible subject matter. Treaties, such as the Agreement on Trade-Related Aspects of Intellectual Property Rights ("TRIPS"), ratified by the United States and much of the world, set forth a flexible approach to patentability. *See* Agreement on Trade-Related Aspects of Intellectual Property Rights, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, Legal Instruments – Results of the Uruguay Round, 33 I. L. M. 1197, 1869 UNTS 299 (1994). AIPPI, through its Resolutions Q133 and Q158, encourages all member countries to update their rules of subject matter patentability for computer-implemented inventions and business methods, and sees in this Court's grant of *certiorari* in *Bilski* the opportunity for the United

States to be a thought leader in its resolution of the complex questions presented by this interplay of technology, statutory mandate, legal precedent, and the public welfare.

The Federal Circuit's rigid "machine-or-transformation" test, as an exclusive test, conflicts with this Court's precedent, including *Benson*, *Flook*, and *Diehr*, wherein the Court explicitly stated that patentable subject matter is not limited to processes tied to particular machines or transformation of articles or materials into different states or things. *See Benson*, 409 U.S. at 71; *Flook*, 437 U.S. at 590; *Diehr*, 450 U.S. at 187. In this vein, the Court made clear that the scope of Section 101 is not only "expansive" and "extremely broad," but is also "*dynamic*." *See Chakrabarty*, 447 U.S. at 308; *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred International, Inc.*, 534 U.S. 124, 130, 135 (2001) (emphasis added).

Indeed, this Court has previously rejected rigid *per se* tests the Federal Circuit has attempted to impose on the patent law, opting instead for flexible approaches that better accommodate emerging technology. *See, e.g., KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 415 (2007) ("We begin by rejecting the rigid approach of the Court of Appeals. Throughout this Court's engagement with the question of obviousness, our cases have set forth an expansive and flexible approach inconsistent with the way the Court of Appeals applied its TSM test here.").

The United States Patent and Trademark Office ("USPTO") is struggling to apply the rigid "machine-or-transformation" test, as an exclusive test, and is achieving inconsistent results. For example, the use of the "machine-or-transformation" test has resulted in very different treatment of machine and process claims for similar subject matter. The USPTO has found claims to a computer system executing software to be statutory,[4] and "find[ing] structure (i.e., a multiprocessor machine)" in a claim in another case as being "implied through the term 'executing,'"[5] while holding in yet other cases that a claim having process steps executed by a processor was *non-statutory*[6] and holding a process claim unpatentable even though it recited a "database" and steps of "processing."[7] Further increasing the volatility of USPTO decisions since the Federal Circuit's *Bilski* decision, the USPTO is also struggling to consistently apply the "machine-or-transformation" test to process claims. For example, the USPTO has found process claims to be non-statutory even though limited to "a method executed in a computer apparatus,"[8] or to a "programmed computer," configured to execute various steps,[9] while on the other hand finding another process claim statutory because it was performed on a first and second "physical computing device."[10] In essence, in attempting to apply the Federal Circuit's holding in *Bilski,* the USPTO has taken the illogical approach that a "generic" computer system is not a machine but that two "generic" computing devices are a machine. In a pragmatic sense, the exclusive application of the machine or transformation step has already been a failure in the USPTO. AIPPI submits that this confusion may be alleviated, at least in part, by rejecting the Federal Circuit's "machine-or-transformation" test in *Bilski*.

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[4] *Ex parte Delta*, Appeal 2009-000982, 2009 WL 1702044, at *5 (B.P.A.I. May 26, 2009), *infra* in Section IV.B.4.

[5] *Ex parte Richter*, Appeal 2008-2386, 2009 WL 1709111, at *6 (B.P.A.I. May 29, 2009), *infra* in Section IV.B.4.

[6] *Ex parte Cornea-Hasegan*, 89 USPQ2d 1557, 1560-61 (B.P.A.I. 2009), *infra* in Section IV.B.4.

[7] *Ex parte Shahabi*, Appeal 2008-2472, 2009 WL 1067191, at *4 (B.P.A.I. Apr. 20, 2009), *infra* in Section IV.B.4.

[8] *Ex Parte Langemyr*, 89 USPQ2d 1988, 1996 (B.P.A.I. 2008), *infra* in Section IV.B.4.

[9] *Ex parte Halligan*, Appeal No. 2008-2823, 2009 WL 963939, at *11 (B.P.A.I., Apr. 8, 2009), *infra* in Section IV.B.4.

IV. ARGUMENT

Before this Court is the question whether the Federal Circuit erred by holding that a "process" (1) must be tied to a particular machine or apparatus or (2) transform a particular article into a different state or thing (*i.e.*, the "machine-or-transformation" test), to be eligible for patenting under Section 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, natural phenomena, and abstract ideas." *Diamond v. Diehr*, 450 U.S. 175, 185 (1981).

Although respectfully declining to opine as to the specific extent to which this Court deems Section 101 should extend, AIPPI respectfully submits that patent-eligible subject matter under Section 101 should be confirmed to include generally business methods implemented utilizing a computer.[11] Under the rigid and exclusive "machine-or-transformation" test, as applied by the USPTO, it is not clear to what extent, if any, "business methods" are eligible for patent protection.

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[10] *Ex parte Wasynczuk*, 87 USPQ2d 1826, 1833 (B.P.A.I. 2008), *infra* in Section IV.B.4.

A. The National and International AIPPI Members Believe a Flexible Approach to Patent-Eligible Subject Matter Will Foster Innovation

The patentability of computer software related innovations has been the subject of lively debate throughout the world for the past 50 years, particularly in recent times, due in no small part to both its commercial value and relative ease of misappropriation. For example, *Ex Parte Lundgren* noted that "'[b]usiness methods' have long been considered statutory subject matter when performed by a machine . . . . [and] [t]he *State Street* and *AT&T* cases, often called 'revolutionary,' involved patented machines or machine-implemented processes that examiners have for some time regarded as nonexceptional." *Lundgren*, 76 USPQ2d 1385, 1392 (B.P.A.I. 2005). Further, the economies of the industrialized countries are increasingly dependent on service industries, to which software and business method patents are important. The eligibility of patent protection for computer programs or business methods has wide-ranging impacts on the United States and world economies.

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[11] At issue in the present case is a business method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price, such method not expressly requiring implementation on a computer. *See Bilski*, 545 F.3d at 949-50.

Computer software related inventions involve by their nature the use of a computer, computer network or other programmable apparatus. In many cases, such inventions are directed to new functionality to be executed by a computer or other programmable device. Computer software related inventions penetrate almost all fields of technology. Because of the distributed nature of computer networks, an apparatus can be distributed over multiple jurisdictions and can be under the control of multiple parties. The requirement that software methods be tied to an apparatus forecloses remedies for the patent holder in a pragmatic sense by often requiring the patent holder to draft an unduly narrow claim or to rely on theories of indirect infringement. AIPPI urges that processes, whether controlled by software or not, should be eligible for patent protection regardless of the apparatus used to effect the process, subject only to the exceptions articulated by the Court, *i.e.*, abstract ideas, naturally occurring phenomena, and laws of nature.

In recent years, patent applications in the United States directed to "business methods" became more prevalent, driven in part by the Federal Circuit's decision in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), *cert. denied*, 525 U.S. 1093 (1999). Other national patent systems, such as those aligned with the basic laws and rules of the European Patent Commission (EPC), excluded "manual" business methods from patentability, but considered as potentially patentable subject matter that specified an apparatus or technical process for carrying out at least some part of the method, that method and the apparatus or process having to be examined as a whole.

The TRIPS agreement, to which U.S. and most European countries are signatories, defines patentable subject matter in a broad and flexible manner, consistent with Supreme Court precedent and contrary to the Federal Circuit's rigid test:

> Subject to the provisions of paragraphs 2 and 3, patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application. Subject to paragraph 4 of Article 65, paragraph 8 of Article 70 and paragraph 3 of this Article, patents shall be available and patent rights enjoyable without discrimination as to . . . the field of technology . . . .

TRIPS, *supra* Section III, at Art. 27, para. 1.[12] Article 27 provides very limited possibilities for exclusions from patentability, namely, exclusions based on public order or morality, and exclusions for diagnostic, therapeutic and surgical methods, as well as for plants and animals. *Id.* at para. 2-3. The North American Free Trade Agreement ("NAFTA"), to which the United States also adheres, includes a similarly broad and flexible definition of patentable subject matter:

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[12] See also Vienna Convention on the Law of Treaties, May 23, 1969, Part III, Observance, Application And Interpretation Of Treaties, Section 3: Interpretation of Treaties, Art. 31, General Rule of Interpretation, para. 1, stating "[a] treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in light of its object and purpose."

> 1. Subject to paragraphs 2 and 3, each Party shall make patents available for any inventions, whether products or processes, in all fields of technology, provided that such inventions are new, result from an inventive step and are capable of industrial application. For purposes of this Article, a Party may deem the terms "inventive step" and "capable of industrial application" to be synonymous with the terms "non-obvious" and "useful," respectively.
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> . . .
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> 7. Subject to paragraphs 2 and 3, patents shall be available and patent rights enjoyable without discrimination as to the field of technology . . .

North American Free Trade Agreement, U.S.-Can.-Mex., art. 1709, para. 1,7, Dec. 17, 1992, 32 I.L.M. 289 (1993).

In view of this backdrop, AIPPI, after extensive study and debate, adopted Resolution Q133 (Appendix at A1-A11) regarding "Patenting of computer software" and Resolution Q158 (Appendix at A12-A15) regarding "Patentability of Business Methods." These positions, stated in the Resolutions and explained further below, reflect sound patent policy developed by international intellectual property experts and users of the patent system on the patentability of software-related inventions and business methods.

AIPPI believes that a rigid "machine-or-transformation" test for patent-eligible subject matter as the exclusive test under Section 101 threatens innovation. Software is often created and distributed independent of hardware and specific media and software functionality is often used across borders while being executed on a remote machine, or multiple remote machines in multiple jurisdictions. The rigid test of *Bilski* fails to recognize these realities and the Federal Circuit has not articulated a principled basis for distinguishing between the different types of computer software or for applying a different set of rules for computer software, as compared to other fields of technology.

As set forth in Resolution Q133, patents should be granted, without discrimination, in all areas of technology, including that of computer software. All computer software meeting the patentability requirements (for example, in the U.S., of Title 35 of the U.S. Code) should be considered patentable in the same manner and treated equally. Computer software provides innumerable useful practical results and is of significant importance to the United States and World economies. Innovation in computer software should be encouraged and protected. Computer software should be patent-eligible in any medium in which it can be commercialized and patentability should not hinge on the type of software or the medium on which the software resides or is carried. Likewise, Resolution Q158 sets forth that the same criteria should be used to evaluate the patentability of all inventions, including methods used in all fields of industrial, commercial and financial activities.

Applying unduly-restrictive criteria to certain technical fields is antithetical to innovation. The development of economic activity on the Internet demonstrates the importance of patent protection for commercial or economic methods. Indeed, the processes of transmission of information to Internet users, and access to this information, are essential for the success of commercial operations carried out through the Internet. Further, innovators in traditional business sectors including mass retailing, banking, finance and insurance, are inventing new methods of doing business, which are frequently, although not necessarily, computer-implemented. These inventions may have great practical interest and economic import and protection for those inventions should not be arbitrarily or unexpectedly denied.

AIPPI respectfully submits that an inventor should have the freedom to protect innovations in ways that reflect market needs, practicability, and the various manners in which such innovations can be commercialized and misappropriated. Limiting patent-eligibility of computer programs or computer implemented methods to claims tied to a "particular machine or apparatus,"[13] in accord with the first prong of the "machine-or-transformation" test in *Bilski*, as opposed to more flexibly permitting protection for computer programs or computer implemented methods in any medium in which they can be commercialized as proposed in Resolution Q133, may force inventors of computer software to rely, at best, on the theory of indirect infringement to protect their inventions. Proof of indirect infringement involves additional evidentiary burdens[14] and inventions involving computer implemented methods would, in effect, be relegated to less effective protection than that available for other types of inventions.

Hence, AIPPI respectfully submits that computer programs or processes utilizing computer programs, whatever the media upon which such instructions are borne, constitute statutory subject matter under 35 U.S.C. § 101 and should be properly evaluated under 35 U.S.C. §§ 102, 103, and 112, and that inventions including computer software and "business methods" should be entitled to the same patent protection given to other advances in technology.

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[13] *See, e.g., Bilski*, 545 F.3d 943, 954. *See also Id.* at 994 (Newman, J., dissenting) ("[w]e aren't told when, or if, software instructions implemented on a *general purpose computer* are deemed 'tied' to a 'particular machine' . . . .") (emphasis added); *Id.* at 1015 (Radar, J., dissenting) ("What link to a machine is sufficient to invoke the 'or machine' prong? Are the 'specific' machines of *Benson* required, or can a *general purpose computer* qualify?") (emphasis added).

[14] *See* 35 U.S.C. §§ 271(a)-(c); *see also Ricoh Co., Ltd. v. Quanta Computer Inc.*, 550 F.3d 1325, 1335 (Fed. Cir. 2008) (holding the sale of disc drives that include "software containing instructions to perform a patented method does not infringe the patent under § 271(a)" because infringement of a method claim requires performing the actions described in the claim and "software is not itself a sequence of actions, but rather it is a set of instructions that directs hardware to perform a sequence of actions.").

B. The "Machine-or-Transformation Test" is an Inappropriate Test that Conflicts with this Court's Precedent

In *Bilski*, the Federal Circuit adopted the "machine-or-transformation" test as the "*governing test* for determining patent eligibility of a process under § 101." 545 F.3d at 955 (emphasis added). The Federal Circuit reiterated its intent in *In re Ferguson*, stating that the "machine-or-transformation" test is its "definitive test" to determine whether a process claim is tailored narrowly enough to encompass only a particular application of a fundamental principle rather than to pre-empt the principle itself. *Ferguson*, 558 F.3d at 1363. The Federal Circuit's test, however, rests on an oversimplification of this Court's precedent.

The determination of whether an invention is patent-eligible subject matter under Section 101 has historically met with a flexible analysis sufficient to accommodate new technologies. *See Chakrabarty*, 447 U.S. at 307. This flexibility has benefitted the United States' position as a leader in technological development. The *per se* "machine-or-transformation" rule set forth by the Federal Circuit, as noted by Judge Newman in her concurrence to

Ferguson, is not the test of the Supreme Court. *See Ferguson*, 558 F.3d at 1367; *see also Benson*, 409 U.S. at 71 ("We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents. It is said that the decision precludes a patent for any program servicing a computer. We do not so hold.").

The exclusivity of the "machine-or-transformation" test is yet another rigid, bright-line test that the Federal Circuit has attempted to impose on the patent law. *See infra* Section IV.B.3. This Court appropriately rejects such attempts, and similarly should reject the exclusive use of the "machine-or-transformation" test. Indeed, the USPTO is already having difficulty applying the Federal Circuit's test consistently for processes or in a manner consistent with its approach to determining the patent-eligibility of other statutory categories (such as machines). *See infra* Section IV.B.4.

1. The Federal Circuit Has Based Its Section 101 Policy in *Bilski* on a Mischaracterization of Supreme Court Case Law

Three cases, *Gottschalk v. Benson*, *Parker v. Flook*, and *Diamond v. Diehr* are the main sources cited for the "machine-or-transformation" test used in *Bilski*. *Bilski*, 545 F.3d at 954. However, as explained by the *amicus curiae* brief filed on March 2, 2009, by the American Intellectual Property Law Association (AIPLA), this rich precedent was drawn upon narrowly and failed to capture significant insights and guidance therein. By way of example, the Court clearly stated in *Benson*, responsive to an argument that a process "must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing,'" that "[w]e do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents." *Benson*, 409 U.S. at 71. Reiterating this point, the Court stated, responsive to arguments that "[this] decision precludes a patent for any program servicing a computer," that "[w]e do not so hold." *Id.* *Flook* likewise rejected the *Bilski* court's test, stating that "[t]he statutory definition of 'process' is broad" and that, although "[a]n argument can be made . . . that this Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a 'different state or thing' . . . [a]s in *Benson*, we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents." *Flook*, 437 U.S. at 588 n.9 (citing *Cochrane v. Deener*, 94 U.S. 780, 787-788 (1876)). These statements indicate this Court's intention to avoid a rigid *per se* rule for Section 101 that would, for example, require subject matter be tied to a particular machine or apparatus or to operate to change articles or materials to different states or things.

At the heart of the *Bilski* majority decision lies an acknowledgement that its "machine-or-transformation" test might poorly adapt to new technology:

> Thus, we recognize that the Supreme Court may ultimately decide to alter or perhaps even set aside this test to accommodate emerging technologies.

> And we certainly do not rule out the possibility that this court may in the future refine or augment the test or how it is applied.

545 F.3d at 956. Not only is this rigid test poorly adapted to new, as well as current technologies, the "machine-or-transformation" test appears suspect at the outset, as its narrow scope and selective focus appears incongruent with other Supreme Court precedent. For example, the "machine or transformation" does not address *The Telephone Cases*, which concerned the patentability of and infringement of, *inter alia*, a claim, unusual by today's standards, directed to "certain new and useful Improvements in Telegraphy," issued in U.S. Letters Patent No. 174,465 ("the '465 Patent") to Alexander Graham Bell. *The Telephone Cases*, 126 U.S. 1, 6 (1888).[15] The Court stated that:

> For such discoveries and such inventions the law has given the discoverer and inventor the right to a patent -- as discoverer, for the useful art, process, method of doing a thing he has found; and as inventor, for the means he has devised to make his discovery one of actual value.

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[15] The *Telephone Cases* involved suits in equity filed in Circuit Court of the United States by the American Bell Telephone Company and others, as owners of the '465 patent and another patent, known as the Bell-telephone Patents, to enjoin several defendants against infringement of those patents. *The Telephone Cases*, 126 U.S. at 3. In the lower courts, *inter alia*, the validity of the '465 patent was challenged and upheld.

Id. at 533. The Court further stated that "[t]he patent for the art does not necessarily involve a patent for the particular means employed for using it" and that "[i]ndeed, the mention of any means, in the specification or descriptive portion of the patent, is only necessary to show that the art can be used; for it is only useful arts -- arts which may be used to advantage -- that can be made the subject of a patent." *Id.*

The Court framed the question underlying each of the cases at issue as being "the scope of the fifth claim."[16] *Id.* at 531. The Court, addressing its broad construction of the unusual claim, appeared to acknowledge that the claim is virtually "a claim for speech transmission by transmitting it; or, in other words, for all such doing of a thing as is provable by doing it" and justified such construction by stating that "[s]urely a patent for such a discovery is not to be confined to the mere means he improvised to prove the reality of his conception." *Id.* at 538-539.[17]

How would this patent, so interpreted by the Court, fare under the "machine-or-transformation" test? It would appear that this claim, despite reciting what could be said to be "physical steps"

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[16] Claim 5 of the '465 patent recited "[t]he method of, and apparatus for, transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations, similar in form to the vibrations of the air accompanying the said vocal or other sounds, substantially as set forth." *Id.* at 531.

[17] The Court also concluded that "[t]he patent is both for the magneto and variable resistance methods, and for the particular magneto apparatus which is described, or its equivalent." *The Telephone Cases*, 126 U.S. at 538.

(i.e., "causing electrical undulations"), does not recite "a particular machine or apparatus" (i.e., it is not confined to any particular means), and does not under the Federal Circuit's characterization of "article," transform such "article" into a different state or thing, unless a voltage or current is deemed to be the "article" transformed.[18] Thus, a claim that the Supreme Court found statutory likely would fail the Federal Circuit's rigid "machine-or-transformation" test.

2. The Court Has Preferred a Flexible Approach to Section 101 for Other Areas in Addition to Processes

The Court has applied a flexible approach to determining patent-eligibility of articles of manufacture and compositions of matter, two of the other enumerated statutory classes in Section 101. In doing so, the Court stressed that Section 101 was meant to be interpreted broadly to accommodate innovation. *Chakrabarty,* 447 U.S. at 308-09. This is in direct conflict with the Federal Circuit's rigid test for processes.

For example, in *Chakrabarty*, the Court held that a genetically-engineered bacterium was a patentable manufacture or composition of matter under Section 101. *Chakrabarty*, 447 U.S. at 310.

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[18] *But see In re Nuijten*, 500 F.3d 1346, 1356-57 (Fed. Cir. 2007) (holding that "[a] propagating electromagnetic signal is not a 'machine' as that term is used in § 101" and "Nuijten's signals, standing alone, are not 'manufacture[s]' under the meaning of that term in § 101.").

In doing so, the Court stressed that "[i]n choosing such expansive terms as 'manufacture' and 'composition of matter,' modified by the comprehensive 'any,' Congress plainly contemplated that the patent laws would be given wide scope." *Id.* at 308. The Court emphasized the goals of the patent system, noting that "[t]he Act embodied Jefferson's philosophy that 'ingenuity should receive a liberal encouragement.'" *Id.* (citations omitted). To that end, the Court, in dealing with this cutting-edge technology, rejected the argument that the bacterium was "a hitherto unknown natural phenomenon." *Id.* at 309. Rather Chakrabarty's "discovery is not nature's handiwork, but his own; accordingly it is patentable subject matter under § 101." *Id.* at 310. *Chakrabarty* cited with approval the statement in *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 480-481 (1974), that the authority conveyed under Art. I, § 8, cl. 8 of the Constitution is exercised in the hope that "the productive effort thereby fostered will have a positive effect on society through the introduction of new products and processes." *Chakrabarty*, 447 U.S. at 307 (citations omitted). *Chakrabarty* likewise emphasized that "[t]he Committee Reports accompanying the 1952 Act inform us that Congress intended statutory subject matter to 'include anything under the sun that is made by man.'" *Id.* at 309 & n.6 (citing S. Rept. No. 1979, 82d Cong., 2d Sess., 5 (1952); H.R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952)).

Similarly, in *J.E.M. Ag Supply* the Court held sexually-reproduced plants to be patentable, reaffirming the statements in *Chakrabarty* that Section 101 was intended to be broad and flexible. *J.E.M. Ag Supply* 534 U.S. at 130, 135. For example, the Court reiterated that "the language of § 101 is extremely broad" and that Section 101 is a "dynamic provision designed to encompass new and un-foreseen inventions." *Id.*

While the Federal Circuit's rigid test illustrates a misunderstanding of modern information technology as applied to methods, the Federal Circuit's *In re Nuijten* shows that this misunderstanding extends to articles of manufactures as well. *See In re Nuijten*, 500 F.3d 1346 (Fed. Cir. 2008), *cert. denied*, 2008 U.S. LEXIS 6858 (U.S., Oct. 6, 2008). In *Nuijten,* the Federal Circuit held that a signal with embedded supplemental data was not patentable because "to be perceived, [it] must be measured at a certain point in space and time by equipment" and that, "[i]n essence, energy embodying the claimed signal is fleeting and is devoid of any semblance of permanence during transmission." *In re Nuijten*, 515 F.3d at 1377. Like its approach in *Bilski,* the Federal Circuit's approach in *Nuijten* is contradicted by *Chakrabarty,* which held that genetically-engineered bacteria, clearly not perceivable without a microscope, could be a patentable manufacture or composition. *See Chakrabarty*, 447 U.S. at 310. Once again, the Federal Circuit's logic, if applied to other technologies, would exclude from patentability many technological innovations that are well accepted as being patent-eligible subject matter.

To illustrate the struggle that the Federal Circuit has had in dealing with this emerging technology, the Federal Circuit suggested that the same signal, if simply stored in a memory rather than transmitted via an electromagnetic transmission, would have been patentable. *See Nuijten*, 500 F.3d at 1357 n.6; *see also In re Lowry*, 32 F.3d 1579, 1583-84 (Fed. Cir. 1994). The Federal Circuit, then, would protect an invention if that invention were carried from one place to another on a floppy disk or a solid state storage device, but not if that same invention were transmitted over radio waves. As it did in *Bilski*, the Federal Circuit in *Nuijten* put forth another bright-line test, based on outdated technology, that could result in insufficient patent protection for modern innovation.

Bilski and *Nuijten* thus underscore the Federal Circuit's tendency to place limitations on the patent-eligibility of new technologies, rooted in a lack of understanding of those technologies, which limitations would not be applied to other more established technologies. Computer software, whether articulated as a set of process steps, or as stored in hardware or embedded in a signal, is not an abstract idea; if particular software has use, it should be considered to be within the broad scope of Section 101, as confirmed by *Chakrabarty*'s language "anything under the sun made by man." *Chakrabarty*, 447 U.S. at 309 & n.6.

Thus, in addition to the Court's statements specifically in the context of patentable processes that patent-eligibility is not limited to claims passing a "machine-or-transformation" test, the Court has repeatedly reaffirmed the breadth and flexibility of Section 101 in other statutory categories.

3. The "Machine-or-Transformation" Test is a Rigid *Per se* Test, Which is a Type of Test That This Court Has Rejected in the Past

The Court has rejected as inappropriate a number of rigid tests adopted by the Federal Circuit. *See, e.g., Festo Corp. v. Shoketsu Kizoku Kogyo Kabushiki Co.,* 535 U.S. 722 (2002); *KSR Int'l Co. v. Teleflex Inc.,* 550 U.S. 398 (2007); and *Quanta Computer, Inc. v. LG Electronics, Inc.,* 128 S. Ct. 2109 (2008).

In *Festo*, the Court rejected, in favor of a flexible approach, the Federal Circuit's "complete bar" to equivalents under the doctrine equivalents to a patentee who had made certain amendments before the Patent Office. *Festo*, 535 U.S. at 737-38. The Court explained that, in prior cases addressing the doctrine of equivalents, "[w]e have considered what equivalents were surrendered during the prosecution of the patent, rather than imposing a complete bar that resorts to the very literalism the equivalents rule is designed to overcome." *Id.* at 738. The Court recognized the difficulty of applying such a bright-line rule, noting that:

> The equivalent may have been unforeseeable at the time of the application; the rationale underlying the amendment may bear no more than a tangential relation to the equivalent in question; or there may be some other reason suggesting that the patentee could not reasonably be expected to

> have described the insubstantial substitute in question.

Id. at 740-41.

These sentiments against rigid, *per se* tests were further echoed in *KSR*, which "reject[ed] the *rigid approach* of the Court of Appeals [for the Federal Circuit]," explaining that "[t]hroughout this Court's engagement with the question of obviousness, our cases have set forth an *expansive and flexible approach* inconsistent with the way the Court of Appeals applied its TSM test . . . ." *KSR*, 550 U.S. at 415 (emphasis added). The Court noted that "[t]he obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents . . . ." *Id.* at 419. The Court's reasoning in *KSR*, that "[t]he diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way," *id.*, rings particularly true in the instant case.

Finally, in *Quanta*, the Court's most recent patent law decision, the Court rejected the Federal Circuit's rigid policy of limiting patent exhaustion to apparatus claims. *Quanta*, 128 S. Ct. at 2117-18. As the Court remarked,

> Apparatus and method claims "may approach each other so nearly that it will be difficult to distinguish the process from the function of the apparatus." By characterizing their claims as method instead of apparatus claims, or including a method claim for the machine's patented method of

> performing its task, a patent drafter could shield practically any patented item from exhaustion.

Id. (internal citation omitted). This potential to exalt form over substance "illustrates the danger of allowing such an end-run around exhaustion. . . . We therefore reject LGE's argument that method claims, as a category, are never exhaustible." *Id.* at 2118.

4. The USPTO's Decisions Demonstrate the Inconsistency of Applying a Rigid "Machine-or-Transformation" Test to Processes

Rather than providing certainty, the *Bilski* case has fostered uncertainty. The USPTO's Board of Patent Appeals and Interferences ("BPAI") is struggling to apply the Federal Circuit's test in a manner consistent with its approach to other classes of statutory subject matter and even among processes. The Federal Circuit's rigid test is arbitrary and is causing the USPTO to exalt form over substance.

For example, in *Ex parte Delta*, the BPAI found a machine claim patentable because it "recit[ed] a 'computer system' executing processes" and "interpret[ed] this system to call for a computer (i.e., hardware) that is programmed with software that when executed causes the computer to perform the claimed steps."[19] *Ex parte Delta*, Appeal 2009-000982, 2009 WL 1702044, at *5 (B.P.A.I. May 26, 2009). Yet, in *Ex parte Cornea-Hasegan*, the BPAI found that "[t]he recitation of a processor in combination with purely functional recitations of method steps, where the functions are implemented using an unspecified algorithm, is insufficient to transform otherwise unpatentable method steps into a patent eligible process." *Ex parte Cornea-Hasegan*, 89 USPQ2d 1557, 1560-61 (B.P.A.I. 2009). Similarly, in *Ex parte Halligan*, the USPTO, despite repeated recitation of a "programmed computer" in a process claim, stated "that the use of a specific machine must impose meaningful limits on the claim's scope to impart patent-eligibility." *Ex Parte Halligan*, 2009 WL 963939, at *11 (B.P.A.I. April 8, 2009) (citing *Bilski*, 545 F.3d at 961-962). The BPAI stated that allowing a claim to a "programmed computer" in combination with purely functional recitations "would exalt form over substance and would allow pre-emption of the fundamental principle" without describing *how*, as in *Benson*, the recited instructions for the programmed computer would "pre-empt" a fundamental principle. *Id.*

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[19] Moreover, the USPTO is not even consistent in evaluating machine claims, and appears to be trying to apply some form of the "machine-or-transformation" test to those types of claims as well. *See, e.g., Ex parte Greene*, Appeal 2008-4073, 2009 WL 1134839 at *7 (B.P.A.I. Apr. 24, 2009) (citing *Bilski*, the BPAI "[found] the nominal recitation of conventional computer components in an apparatus claim otherwise directed to a pure mathematical algorithm (e.g., a Fast Fourier Transform) does not impose meaningful limits on the scope of the claim").

In *Ex parte Shahabi,* the USPTO found a process unpatentable, even though it recited a "database," and steps of "processing," by construing "database" to not require a machine and by determining that "processing" could be performed in one's head. *Ex Parte Shahabi,* Appeal No. 2008-2472, 2009 WL 1067191, at *4 (B.P.A.I. Apr. 20, 2009). Yet in *Ex parte Richter,* the USPTO had no trouble "find[ing] structure (i.e., a multiprocessor machine)" as being "implied through the term 'executing'" in finding the machine claim to be patentable. *Ex parte Richter,* Appeal No. 2008-2386, 2009 WL 1709111, at *6 (B.P.A.I. May 29, 2009).

Thus the USPTO, on one hand, has found a conventional computer system that executed software to be a patentable machine, yet on the other hand found that executing software on a conventional computer was not tied closely enough to a machine to pass the Federal Circuit's "machine-or-transformation" test for processes. Likewise, the USPTO has refused to read a computer into method claims in rejecting their patentability, and has rejected method claims expressly reciting a programmed computer, yet has relied on similar language to read a computer into machine claims to sustain their patentability. *Bilski* reiterated the Court's caution in *Flook* regarding exalting form over substance. *See Bilski,* 545 F.3d at 957 (quoting *Flook,* 437 F.3d at 590). Yet, this is exactly what the USPTO is using the "machine-or-transformation" test to do.

Moreover, the BPAI, in rejecting the patentability of software executed on a computer, is rejecting as unpatentable claims that presumably should pass the "machine-or-transformation" test. After all, the claims are tied to a particular machine – a computer. *Bilski*, of course, provided no guidance as to which machines a process could be tied to in order to render the process patent-eligible. *See Bilski*, 545 F.3d at 957 ("We leave to future cases the elaboration of the precise contours of machine implementation, as well as the answers to particular questions, such as whether or when recitation of a computer suffices to tie a process claim to a particular machine."). The USPTO apparently has concluded that, in some cases, a computer is not one of those machines, *see Cornea-Hasegan*, 89 USPQ2d at 1561, even though a computer system executing a process can be a patentable machine, *see Delta*, 2009 WL 1702044, at *5. Quite simply, as the USPTO has demonstrated, the Federal Circuit's approach is arbitrary and unworkable.

Finally, the USPTO has been unable to consistently apply the "machine-or-transformation" test to process claims, sometimes finding a generic computer to be sufficient recitation of a machine, and sometimes not. For example, in *Ex Parte Langemyr* the USPTO determined that "a method executed in a computer apparatus" did not meet the "machine-or-transformation" test because:

> This recitation is so generic as to encompass any computing system, such that anyone who performed this method in practice would fall within the scope of these claims. Thus, the recitation of a computer apparatus in the preamble is not, in fact, a limitation at all to the scope of the claim, and the claim is

> directed, in essence, to the method performed by any means.

Ex Parte Langemyr, 89 USPQ2d 1988, 1996 (B.P.A.I. 2008). Yet, in *Ex parte Wasynczuk,* the USPTO found that a method in which the steps were practiced on a "first" and "second" "physical computing device" met the "machine-or-transformation" test because those "physical computing device[s]" were "'a particular apparatus' to which the process is tied, not simply a generic computing device for performing the steps." *Ex parte Wasynczuk*, 87 USPQ2d 1826, 1833 (B.P.A.I. June 2, 2008). The USPTO has interpreted nearly the same language, "a computer apparatus" and a "physical computing device," to be both "so generic as to encompass any computing system" and "not simply a generic computing device." Yet, a "physical computing device" is no more or less a particular structure than "a computer apparatus." In *Langemyr,* the USPTO has seemingly used the notion of preemption to find a claim non-statutory, while showing no such concern in nearly identical circumstances in *Wasynczuk.* These flatly contradictory results illustrate succinctly the impossibility of applying the Federal Circuit's bright-line test.

V. CONCLUSION

The Federal Circuit's decisions in *Bilski* and *Nuijten*, along with the USPTO decisions discussed in Section IV.B.4, *infra*, show inconsistent efforts on the part of the Federal Circuit and the USPTO to limit the patent-eligibility of information technology inventions to the physical machines of the last century. Rigid tests based on past technologies must be avoided and sufficient flexibility in the statutory subject matter test must be available to foster innovation in undeveloped, nascent, and yet to be discovered technologies.

For the forgoing reasons, AIPPI respectfully submits that the Federal Circuit erred by holding that a process must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing. AIPPI respectfully encourages the Court to reverse or vacate the Federal Circuit's decision in *Bilski* and reaffirm the breadth of Section 101, and its flexibility to accommodate new and unforeseen inventions.

Respectfully submitted,

R. MARK HALLIGAN *Counsel of Record* WILLIAM D. PEGG DAVID C. MCKONE NIXON PEABODY, LLP 300 S. Riverside Plaza Chicago, IL 60606	MARC KAUFMAN NIXON PEABODY LLP 401 9th Street, N.W Washington, DC 20004

Attorneys for Amici Curiae Association Internationale Pour la Protection de la Propriete Intellectuelle (AIPPI) And International Association For The Protection Of Intellectual Property – U.S. ("AIPPI-US").

APPENDIX

AIPPI

QUESTION 133

Patenting of computer software

Yearbook 1997/III, pages 299 - 303 Q133
Executive Committee of Vienna, April 18 - 22, 1997

Question Q133

Patenting of computer software

Resolution

AIPPI

considering its previous positions and resolutions adopted since 1974 recognising the need to protect creations embodied in computer software in general;

considering that copyright protection for computer software was initially recommended by AIPPI due to such type of protection being immediate and able to take benefit from already existing international conventions;

considering that copyright protection has been recognised by AIPPI as being inadequate as a sole system for protecting computer software;

considering the increasing technical and economic importance of computer software and the fact that effective protection for computer software developers is critical;

considering that the TRIPS Agreement requires patent protection without restriction for any inventions in all areas of technology; and

considering the **reasons** appended to this resolution,

Resolves that:

1. As a question of principle clearly reflected in the TRIPS Agreement and taking into account other reasons of a legal, economic and practical nature, patents should be granted without discrimination in all areas of technology, including that of computer software, such as programmes.

2. Computer software should be considered patentable provided that the claimed subject matter meets the traditional patentability requirements of novelty, inventive step (non-obviousness) and utility or industrial applicability.

3. The technical character of computer software

should be generally acknowledged and its industrial applicability should be construed in a broad manner so as to embrace the concept of enabling a useful practical result.

4. In spite of increasingly liberal interpretations by the national and regional Patent Offices and Courts, modifications in many national and regional laws regarding patents are recommended to provide or ensure adequate patent protection for computer software; this including the abolition of any limitations in the laws or treaties relating to industrial property, as well as to promote legal certainty.

5. All computer software meeting the patentability requirements should be considered patentable in the same manner and with equality of treatment with no distinction being drawn between the different types of software.

6. Patent protection and copyright protection for computer software are of a different nature and relate to different aspects of the software. They may co-exist notwithstanding their different terms of protection.

7. Computer software should be inherently patentable in any medium in which it can be commercialised.

8. The establishment of special rules for different technologies is undesirable in general with respect to the presentation of the

specification (description) and the drafting of the claims and the same principle should apply to patents relating to computer software, it being as usual the responsibility of the applicant to ensure that he meets the relevant national or international requirements. Moreover, special rules should not be encouraged as a solution to other problems, such as the difficulty to effect prior art searches. In this respect, AIPPI encourages all efforts by Patent Offices and all other interested parties to make prior art searches more reliable in the area of software without resorting to the adoption of special rules that could impose undue or unnecessary burden on patent applicants.

9. The concept of inventive step or non-obviousness should be applicable to the patentability of computer software, notwithstanding any practical difficulties that may exist.

10. The exercise of patent rights in the case of computer software is no different in principle from that in the case of other types of invention.

Reasons:

A) Principle of patentability

Independently of the terms of any specific national legislation, there is no doubt that the creation of computer software is of considerable technical complexity. In principle, therefore, there is no reason to deny patent protection to inventions in the area of computer software. Such a position is integrally in accordance with Article 27 of the TRIPS Agreement.

The creation of computer software is basically as lengthy and expensive a process as the software is simple to copy. A literal copy may be prohibited under copyright. However, the functional concept behind a given software may be copied without such an evident infringement of the copyright. Functional concepts translated into products or processes are the proper subject matter of patents and an efficient system of protection is highly desirable in order to protect investment and to encourage development in this particular technical area.

To exclude computer software from patent protection would be arbitrary and discriminative with respect to a technology of ever increasing importance and which merits concrete protection. In addition the dividing line between hardware and software is becoming increasingly blurred and it is discriminative to consider one patentable and the other not.

B) Conditions of patentability

If software is to be patentable, it is most appropriate that the same conditions apply as they do for other types of invention. Apart from novelty and inventive step (or non-obviousness), the law in most jurisdictions requires patentable inventions to have a technical character or technical applicability. Software can take many types of form, may be machine-integrated or not and new types of software will certainly appear with new technological development. It is therefore not appropriate to distinguish between the different types which should all be treated on an equal footing, the question of patentability depending on the invention meeting the traditional requirements.

With respect to technical or industrial character or applicability, basically all computer software is technical in nature and this alone should meet this requirement. However, it is important that some useful practical result be obtained. Moreover, the difference between a technical result and, for example an aesthetic result is not pertinent to the generally technical nature of the software in itself. In considering the patentability of any given software, therefore, any legal requirement regarding technical character should be construed broadly so as to embrace the concept of obtaining a useful practical result.

It should also be observed that the requirement of technical nature is open to many interpretations, as has been demonstrated by the many decisions on the matter. It is recommended that there only be a requirement for inventions to enable a useful practical result.

C) Legal Certainty and changes in legislation

The tendency of the courts in many countries that require inventions to have a technical character, including the European Patent Office, has become progressively less strict in construing the requirement as applied to software related inventions.

The laws of a large number of countries contain prohibitions to the patenting of software "per se". This is contrary to the TRIPS Agreement, contrary to the position given above and it is not useful.

Alterations in the relevant national and regional legislations, removing the software "per se" prohibition and eliminating the technical character requirement are therefore recommended to ensure the universal recognition of the patentability of computer software and to provide legal certainty.

It is emphasised that the removal of the software "per se" prohibition does not mean that all software is patentable. It only means that the mere fact that a claimed invention relates to software "per se" should not be a reason in itself for rejection. Naturally, it must fulfil the normal requirements of patentability,

D) The co-existence of patent and copyright protection

In spite of the difficulties that may arise

- in attempting to draw a line of demarcation between the aspects of computer software that can be protected under copyright and by means of a patent;

- with regard to the differences there may be between the proprietary rights under copyright and patent law; and

- with regard to the different durations of copyright and patent protection, especially with regard to problems that may arise in determining which aspects of the computer software cease to be protected when the patent rights expire,

there appears to be no decisive reason against the co-existence of patent and copyright protection. The apparent problem appears to be analogous to the difference between patents and models or registered designs which have historically existed side by side. Similarly, there appears to be no overriding reason why the expiry of a patent relating to software should have any effect on the protection under copyright that may continue to be in force.

E) Purely abstract data handling operations

The fact that a computer software invention involves merely abstract data handling operations should not exclude it from patentability, provided that it enables a useful practical result.

F) Software in machine-readable form

Considering that software in combination with a known general purpose computer may be patentable when a useful practical result is obtained, and furthermore that it is the software itself that represents the true technical and economic importance of the creation, it is arbitrary to consider the product that is commercialised to be excluded from protection. It would be the same thing as to say that a novel nut can only be patented when claimed in combination with its bolt or that a spark plug can only be claimed in combination with an internal combustion engine. Consequently, it is reasonable to consider computer software to be inherently patentable in any medium in which it can be commercialised, provided that it is novel and inventive and, furthermore, that when used appropriately, i.e. in combination with a computer, it produces a useful practical result.

G) The specification (description) and claims

It is a basic position of AIPPI that specific rules or norms for the drafting or presentation of the specification or claims of patents should be avoided wherever possible. There would appear to be no convincing reason for this to be different with respect to software inventions. The applicant for a patent should have the choice of presenting and claiming his invention as he thinks fit. Whether a patent does or does not meet the requirements of disclosure and patentability will always arise in the case of any technology and each applicant has to assume the responsibility of deciding how he meets the requirements. The meeting of very specific rules could well be an undue, unnecessary and possibly expensive burden on the applicant.

The only plausible reason for special rules for the presentation of the specification appears to be to facilitate prior art searches. However, this would not appear to justify the burden or the lack of liberty imposed on the applicant.

At the same time, AIPPI encourages Patent Offices and other interested parties to continue to make all efforts to devise manners, such as the development of classification systems and data-bases, to facilitate prior art searching.

H) The exercise of computer software patent rights

Notwithstanding the difficulties that may arise in the exercise of rights, in particular the questions of territoriality in the case of computer software used in international communications networks, no convincing reason has been found in principle for the exercise of software patent rights to be different from the exercise of patent rights in any other technical field. Exceptions to rights, such as with respect to interoperability (e.g. the communication between one software and another) are not approved, without prejudice to parallel laws or regulations that may already exist in other areas, including those relating to commercialisation, anti-trust and others.

* ** ** ** * *

AIPPI

QUESTION 158

Patentability of Business Method

Yearbook 2001/II, pages 243 - 244 Q158
38th Congress of Melbourne, March 23 - 30, 2001

Question Q158

Patentability of Business Methods

Resolution

AIPPI

Considering that:

(a) The patent system is designed to compensate fairly research as well as the creation of new inventions.

(b) The right to protect inventions arising out of economic activities is guaranteed by article 1 of the Paris Convention.

(c) Pursuant to article 27 of the TRIPS treaty, a patent may be obtained for any invention in all fields of technology.

(d) The question of protection of business methods has been raised due to the widespread use of computers and the development of software.

(e) During the 1997 meeting of the Executive Committee held in Vienna, which considered Question 133 "The Patentability of Computer Software" the AIPPI formally declared it was in favour of patent protection of computer software.

And whereas:

(f) Since its origins, patent law has progressively adapted to new subject matter,

(g) Problems resulting from this expansion have nevertheless been resolved without the necessity of substantially modifying the criteria for the granting of patents,

(h) Creations of a purely abstract nature are generally excluded from the scope of protection of patents,

(i) In several legal systems, inventions, in order to be protected by patents, must not only be useful but must also possess a technical content,

(j) The TRIPS treaty has not specified how it intends the term "fields of technology" appearing in article 27 to be defined with respect to the definition of patentable subject matter,

(k) The expansion of patentable subject matter, which has not yet been considered by different national laws may raise practical problems, particularly with respect to procedures and rules of examination before patent offices.

Adopts the following resolution:

1 Inventions including methods used in all fields of industrial, commercial and financial activities, herein referred to for purposes of simplification as "business methods", should be entitled to patent protection provided that the invention as defined in the claims has a technical content.

2 If such an invention as a whole has a technical content, that should be sufficient for patentability even though the point of novelty and inventive step (non-obviousness) does not lie in the technical content.

3 Further, the protection of such inventions by patents should be assessed or based upon the same criteria as other inventions, and no new or special criteria should be applied.

4 The assessment of inventive step for such inventions should be made on a case-by-case basis and even known methods may, if their application to a new field is inventive, be granted patent protection.

5 Merely transforming a known method into software form does not give rise to a presumption that such an invention has an inventive step.

6 Patents for business methods should be treated in the same way as patents in other fields. In particular:

a. The scope of protection granted by patents with respect to business methods should be the same as the protection granted to other inventions.

b. Where evidentiary methods allow for a reversal of the burden of proof, this should be available for business method patents as well.

c. The term for such patents should be the same as for patents in other fields.

d. The remedies for infringement of such patents, such as damages and injunctions, should be the same as for patents in other fields.

7 In the granting of such patents, AIPPI encourages the improvement of search and examination procedures by patent offices, particularly by the creation of databases in connection with prior art.

AMICUS
CURIAE
BRIEF

135

Supreme Court, U.S.
FILED
AUG 6 - 2009
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(35)

No. 08-964

In The Supreme Court Of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
PETITIONERS,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
RESPONDENT.

On Writ of Certiorari to The United States Court of Appeals for the Federal Circuit

BRIEF OF *AMICUS CURIAE* AUSTIN INTELLECTUAL PROPERTY LAW ASSOCIATION IN SUPPORT OF NEITHER PARTY

Jennifer C. Kuhn, Esq.
Counsel of Record
5003 Timberline Drive
Austin, Texas 78746
(512) 731-1847

Counsel for Amicus Curiae
Austin Intellectual Property
Law Association

4X9566

Questions Presented for Review

1) Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patent under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

2) Whether the Federal Circuit's "machine-or-transformation" test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that "patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273.

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STATEMENT OF INTEREST OF THE AMICUS CURIAE[1]

Amicus curiae Austin Intellectual Property Law Association ("Austin IPLA") is a bar association located in Austin, Texas with approximately 300 members engaged in private and corporate practice across a wide range of industries and technologies. (*See* www.austin-ipla.org.) Austin IPLA members represent both the owners of and users of intellectual property.

Austin IPLA takes no position on the ultimate outcome of this matter, and specifically takes no position on whether petitioner's particular process claims should be granted patent protection. Austin IPLA's sole interest is that the integrity of the Patent Act be maintained through consistent statutory interpretation.

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[1] This *amicus curiae* brief is presented by the Austin IPLA under Supreme Court Rule 37(a). Petitioner and Respondent have consented to the filing of this brief. In accordance with Supreme Court Rule 37.6, Austin IPLA states that this brief was authored by Jennifer C. Kuhn, Esq., Amicus Committee Chair for Austin IPLA. No counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than amicus curiae, its members, or its counsel made a monetary contribution to its preparation or submission.

I. Introduction and Summary of Argument

Patent law is in no way exempt from the general rules of statutory interpretation that apply to all other statutes. Accordingly, when faced with an issue of statutory construction in a patent case, as here, this Court should look not only to its patent law precedent, but also its *non-patent* statutory interpretation precedent.

Austin IPLA expects that the parties and other *amici* may focus their arguments on *patent* related jurisprudence. So as to avoid arguments already presented by others, Austin IPLA focuses instead on the proper statutory interpretation of 35 U.S.C. §101 under the Supreme Court's *non-patent* general statutory interpretation precedent.

This Court's *non-patent* precedent overwhelmingly shows that the statutory interpretation adopted by the Federal Circuit in *In re Bilski*, 545 F.3d 943 (2008) cannot be affirmed by this Court.

First, the Federal Circuit's interpretation of "process" does not comport with the general statutory interpretation canon that statutory terms must be interpreted consistently throughout a statute. The Federal Circuit's version of "process" in 35 U.S.C. § 101 is far narrower than the broad definition of "process" in 35 U.S.C. § 100(b) (2008). The Federal Circuit's decision in Bilski notes that the definition in 35 U.S.C. § 100(b) is "unhelpful" because the term "process" is repeated in the definition. 545 F.3d at 951, n.3. The inclusion of the term "process" in the statutory definition of "process" is not circular or unhelpful. Instead, it suggests that Congress incorporated the settled common law meaning of "process" into the statutory definition of "process."[2] Applying the broader statutory definition of "process," the "machine-or-transformation" test is a sufficient, but not necessary test to determine the patentability of a process patent under 35 U.S.C. § 101. The proper statutory interpretation of 35 U.S.C. § 101 will include the "machine-or-transformation" test.

Second, the Federal Circuit's decision in *Bilski* applies a statutory interpretation that renders superfluous another portion of the statute, an interpretation that is highly disfavored according to principles of general statutory interpretation. The Federal Circuit's statutory interpretation in *Bilski* renders superfluous portions of 35 U.S.C. § 273, a statute that provides a defense to the infringement of business method patents.

As a result, the Federal Circuit's decision appears to be in conflict with two separate, well-established canons found in Supreme Court *non-*

---

[2] *See Kungys v. United States*, 485 U.S. 759, 770 (1988) (Scalia, J.) ("Where Congress uses terms that have accumulated settled meaning under either equity or the common law, a court must infer, unless the statute otherwise dictates, that Congress means to incorporate the established meaning of these terms." *NLRB v. Amax Coal Co.*, 453 U.S. 322, 329 (1981). *See also Perrin v. United States*, 444 U.S. 37, 42-43 (1979)).

patent statutory interpretation case law. Austin IPLA addresses each of these in greater detail below.

II. The Federal Circuit's *Bilski* Decision Is Contrary to the Canon that Statutory Terms Must Be Construed Consistently Throughout a Statute

It is a "basic canon of statutory construction that identical terms within an Act bear the same meaning." *Estate of Cowart v. Niklos Drilling Co.*, 505 U.S. 469, 479 (1992)(*citing Sullivan v. Stroop,* 496 U.S. 478, 484 (1990) *and Sorenson v. Secretary of Treas.,* 475 U.S. 851, 860 (1986)). In rejecting arguments based on two different interpretations of the phrase "other than" this Court stated that attempting to give a single term two different interpretations in single statute "strains the meaning of ordinary words." *Bankamerica Corp. v. United States*, 462 U.S. 122, 129 (1983).

By giving the term "process" in 35 U.S.C. § 101 an interpretation distinctly narrower than the definition of "process" in 35 U.S.C. § 100(b), the Federal Circuit's decision in *Bilski* "strains the meaning of ordinary words," contrary to this Court's precedent. 462 U.S. at 129. The Federal Circuit's stated reason for not applying the definition of "process" in 35 U.S.C. § 100(b) is that it contains the very term it is defining, such that the Federal Circuit deemed the statutory definition "unhelpful." 545 F.3d at 951, n.3.

This Court's statutory construction precedent, however, suggests a deeper analysis. First, statutory interpretation begins with the language of sections 101 and 100(b). Second, an express statutory definition such as that found in section 100(b) should control. Third, the fact that the express statutory definition of "process" contains the term "process" is not necessarily circular or "unhelpful" as the Federal Circuit noted in *Bilski*, but instead, is consistent with Congress's use of term "process" in its common law sense to arrive at a broader statutory definition of the term "process." Austin IPLA treats these points seriatim.

A. Statutory Interpretation Begins With the Language of Sections 101 and 100(b)

The starting point for any question of statutory interpretation is the language of the statute. *See Diamond v. Diehr*, 450 U.S. 175, 182 (1981). First, the term "process" is used in 35 U.S.C. 101 as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. § 101.

Second, the term "process" is defined in 35 U.S.C. § 100(b) as follows:

> The term 'process' means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter or material.

35 U.S.C. § 100(b).

Any statutory interpretation of the term "process" in 35 U.S.C. § 101 must be consistent with the language of 35 U.S.C. § 100(b), which defines the term "process" for the entire Patent Act. *See Stenberg v. Carhart*, 530 U.S. 914, 942 (2000).

B. A Court Must Follow an Explicit Statutory Definition, Such as 35 U.S.C. § 100(b)

The Federal Circuit's failure to follow the statutory definition of "process" in section 100(b) when interpreting "process" in section 101 is inconsistent with this Court's *non-patent* precedent. In addition to requiring statutory terms to be interpreted consistently throughout a statute, this Court accords a special status to statutory definitions: "When a statute includes an explicit definition, we must follow that definition, even if it varies from that term's ordinary meaning." *Stenberg v. Carhart*, 530 U.S. 914, 942 (2000). The question of the proper statutory interpretation of "process" in section 101 then depends solely on the proper interpretation of the statutory definition of "process" in section 100(b). *See* 35 U.S.C. §§ 100(b) & 101; *cf. Stenberg*, 530 U.S. at 942.

C. The Fact That the Statutory Definition of the Term "Process" in 35 U.S.C. § 100(b) Recites the Term "Process" Illustrates That Congress Intended to Include the Common Law Meaning of "Process" Within a Broader Statutory Definition of "Process"

The Federal Circuit in *Bilski* dismissed section 100(b) as "unhelpful given that the definition itself uses the term 'process.'" *Bilski*, 545 F.3d at 951, n.3. The use of the term "process" within the statutory definition of "process" does not necessarily render the statutory definition circular or invalid. Analysis of the manner in which "process" is used in section 100(b) suggests that Congress intended to incorporate the common law meaning of "process" into a broader statutory definition.

This Court has held that grammar, syntax and punctuation play a role in statutory interpretation. *See United States v. Ron Pair Enters.*, 489 U.S. 235, 242 (1989) ("The language and punctuation Congress used cannot be read any other way.") In this case, analysis of the way the words in section 100(b) are used and punctuated demonstrate that the defined term "process" is distinct from the common law meaning of "process" used in the statutory definition:

> The term 'process' means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter or material.

35 U.S.C. § 100(b) (emphases added to show three uses of the term "process").

The first use of "process" shows the term "process" in single quotation marks. Those quotation marks serve to show it is the term being defined, and set it apart from the rest of the definition. The second and third uses of "process" in the definition show "process" with no quotation marks. Without the quotation marks, the use of "process" shows that it is being used as an *undefined* term in the statute. Thus, the definition of "process" in 35 U.S.C. § 100(b) *includes* the normal meaning that the rules of statutory interpretation would assign to the *undefined* term "process" because the *undefined* term "process" is part of the definition. Properly interpreting both uses of "process" is necessary to determine the scope of 35 U.S.C. § 101(b).

According to this Court's precedent, terms used in statutes receive their ordinary meanings, or their settled, common law meanings, if the term has such an "established meaning." *See Kungys* 485 U.S. at 770. (Where Congress uses terms that have accumulated settled meaning under either equity or the common law, a court must infer, unless the statute otherwise dictates, that Congress means to incorporate the established meaning of these terms".) When section 100(b) was added to the Patent Act in 1952, the term "process" had a settled meaning in the common law that was, essentially, the "machine-or-transformation" test adopted by the Federal Circuit in *Bilski*.[3]

The creation of a separate definition of "process" in 35 U.S.C. § 100(b) in the 1952 Patent Act clearly indicates Congress's intent that subject matter of processes in the Patent Act extend beyond what the common law had previously recognized as patentable, but should include all previously patentable subject matter. Congress's use of "process" within the definition, without quotation marks, shows that Congress intended the common law definition of "process" to become part of the statutory definition of "process."[4]

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[3] The historical development of the term "process" is discussed at length in the Federal Circuit's opinion and dissenting opinions. *See* 545 F.3d 943 et seq. Mindful of Supreme Court Rule 37.1, *amicus curiae* Austin IPLA will not repeat that material here.

[4] On two occasions this Court has acknowledged that the "machine-or-transformation" test does not encompass the full scope of patentable subject matter for processes. *See Gottschalk v. Benson*, 409 U.S. 63, 71 (1972) ("It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing.' We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.") & *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978) (citing *Benson*). In both *Benson* and *Flook*, this Court rejected the process claims at issue as unpatentable, but took care to note that precedent did not describe the entire set of patentable process subject matter. These statements support the interpretation of section 100(b) as incorporating, but not limited to, the common law meaning of "process." Thus, the "machine or transformation test" test is a sufficient, but not necessary, test for determining the patentability of a process.

Hence 35 U.S.C. § 100(b) expressly defines "process," and the statute's use of the term "process" in the definition of the term "process" is not necessarily circular. Accordingly, the Federal Circuit's "machine-or-transformation" test in *Bilski* does not comport with the general statutory interpretation canon that statutory terms must be interpreted consistently throughout a statute.

III. The Federal Circuit's Interpretation in *Bilski* Is Contrary to the Canon that Statutory Terms Should Not Be Interpreted So As to Render Another Portion of the Same Statute Superfluous

The Federal Circuit's "machine-or-transformation" test also violates another statutory interpretation rule found in the Supreme Court's *non-patent* precedent: a statutory interpretation should not render another section of the same statute superfluous. *Mackey v. Lanier Collection Agency & Serv., Inc.*, 486 U.S. 825, 837 (1988). In *Mackey*, this Court rejected an interpretation that would have rendered a section of the ERISA statute superfluous.

In this case, the Federal Circuit's interpretation of 35 U.S.C. § 101 as being limited to the "machine-or-transformation" test renders portions of 35 U.S.C. § 273 completely superfluous. Section 273(a)(3) reads as follows:

> § 273 Defense to infringement based on earlier inventor
>
> (a) Definitions. For the purposes of this section...
>
> (3) The term "method" means a method of doing or conducting business.
>
> (b) Defense to Infringement.—

> (1) In general.—It shall be a defense to an action for infringement under section 271 of this title with respect to any subject matter that would otherwise infringe one or more claims for a method...

35 U.S.C. § 273.

Section 273 was added to the Patent Act in 1999 specifically to create a defense against the business method patents allowed after the Federal Circuit's decision in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998).

The quoted portions of section 273 become superfluous under the Federal Circuit's "machine-or-transformation" test because no *State Street*-type business method patent claim could pass such a test, and therefore no defense against infringement of such a business method would be necessary. If patentable processes are limited by the "machine-or-transformation" test, then the statutory subject matter would be too narrow to encompass such a business method, and there would be no need for a defense for prior users of such a business method.

IV. Conclusion

For the foregoing reasons, *amicus curiae* Austin IPLA suggests that the Federal Circuit's decision in *Bilski* should be vacated in view of this Court's general statutory interpretation precedent, and remanded for further proceedings.

Respectfully submitted,

Jennifer C. Kuhn, Esq.
Counsel of Record
5003 Timberline Drive
Austin, Texas 78746
(512) 731-1847

Counsel for Amicus Curiae
Austin Intellectual Property
Law Association

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Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

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BRIEF OF *AMICUS CURIAE* AWAKENIP, LLC IN SUPPORT OF PETITIONERS

JEFFREY R. KUESTER
THOMAS, KAYDEN,
HORSTEMEYER &
RISLEY, L.L.P.
600 Galleria Pkwy SE
Suite 1500
Atlanta, GA 30339
(770) 933-9500

JOEL H. THORNTON
Counsel of Record
THE THORNTON FIRM
P.O. Box 129
Rome, GA 30162
(706) 266-6836

LEGAL PRINTERS LLC, Washington DC • 202-747-2400 • legalprinters.com

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INTEREST OF *AMICUS CURIAE*

Pursuant to Supreme Court Rule 37, AwakenIP, LLC (hereinafter "AwakenIP") submits this brief as *amicus curiae* in support of Petitioners Bernard L. Bilski, *et al.*[1] All parties have consented to the filing of *amicus curiae* briefs with this Court.

AwakenIP provides intellectual property consulting services that help maximize the value of intellectual assets. Furthermore, through its new blog website at AwakenIP.com, it attempts to reignite broader recognition of the full value of intellectual property. Much criticism has been levied against the usefulness of intellectual property and its place in our new economy, but there are those among us who continue to recognize the wisdom of maintaining strong intellectual property protection for worthwhile contributions that "promote the progress of science and useful arts."

While there has always been a need to distinguish and properly limit the scope of protection for worthwhile contributions, the pendulum of protection has been swinging in the direction of weaker protection for a number of years. It is time for the pendulum to begin swinging in the other direction, or the value of innovation and creativity will eventually disappear. It is time for intellectual property and those who recognize our vital need for it to wake up.

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[1] Pursuant to Supreme Court Rule 37.6, counsel for *amicus curiae* certifies that no counsel of either party authored the brief in whole or in part and that no person or entity other than the named *amicus curiae* or its counsel has made a monetary contribution to the preparation or submission of this brief.

AwakenIP is very interested in the outcome of the case before the Court and is concerned that the Court of Appeals for the Federal Circuit obfuscated Congressional intent by rigidly construing § 101 of the Patent Act and imposing ambiguous and arbitrary requirements on patent seekers.

SUMMARY OF ARGUMENT

1. The Federal Circuit's decision held that a process that is not tied to a particular machine or fails to transform a particular article is not patentable. This test requires courts and examiners at the United States Patent and Trademark Office (USPTO) to distinguish abstract ideas from processes that satisfy the machine-or-transformation test. This task of distinguishing abstract ideas from protectable subject matter suffers from the same vagaries that plague the copyright idea/expression dichotomy. The Federal Circuit's decision threatens to transform patentable subject matter analysis from a once bright-line rule to a complicated and unworkable analysis that currently haunts copyright law.

2. The Federal Circuit's machine-or-transformation test resonates negative implications across fields beyond business methods. For instance, courts have experienced difficulty in applying the rigid test to unpredictable fields such as biotechnology. Moreover, existing patentability guidelines proscribed by sections 102, 103, and 112 of the Patent Act provide clear and adequate direction for determining patentability in the unpredictable fields. In fact, courts have recognized the importance of sections 102, 103, and 112 in evaluating

patent applications in the unpredictable fields.

3. The Federal Circuit's machine-or-transformation test has created superfluous confusion among lower courts and the USPTO. Consequently, the Federal Circuit has disrupted long-settled court precedent. As such, this Court should resolve the pending action in favor of Petitioners.

ARGUMENT

I. THE FEDERAL CIRCUIT HAS CREATED AN UNWORKABLE ABSTRACT IDEA TEST FOR DETERMINING PATENTABILITY THAT WILL UNDULY SUFFER LIKE THE VAGUE COPYRIGHT IDEA/EXPRESSION DICHOTOMY

The machine-or-transformation test is forcing the well-defined concepts of patentable subject matter toward the complex abstract idea analysis that has frustrated copyright attorneys for decades. Specifically, following the Federal Circuit's decision, the task of relegating protected elements and abstract elements in computer program patent infringement claims will soon mirror the baffling and multifarious procedures of computer program copyright analysis.

It is a fundamental principle of copyright law that copyright protection does not extend to an idea, only to the expression of the idea. *See* 17 U.S.C. § 102(b); *Mazer v. Stein,* 347 U.S. 201, 217 (1954); *Baker v. Seldon,* 101 U.S. 99 (1879). In recent years the limitation on ideas has developed into the "idea/expression dichotomy." As this Court stated in *Harper & Row Publishers, Inc. v. Nation Enterprises,* quoting the Second Circuit's analysis, "idea/expression dichotomy strike[s] a definitional balance between the First Amendment and the Copyright Act by permitting free communication of facts while still protecting an author's expression." 471 U.S. 539, 556 (1985).

Computer programs are regulated under the same laws, and no special exceptions exist. Legislative history specifically states that copyright laws protect computer programs only "to the extent that they incorporate authorship in programmer's expression of original ideas, as distinguished from the ideas themselves." *See* H.R.Rep. No. 1476, 94th Cong., 2d Sess. 54, reprinted in 1976 U.S.C.C.A.N. 5659, 5670. Confirming this principle, a definition of the term "computer program" was added to 17 U.S.C. § 101 as an amendment to the 1976 Copyright Act. *See* Pub.L. No. 96-517, § 10(a), 94 Stat. 3028 (1980).

Through years of analyzing the idea/expression dichotomy, the courts have struggled with attempting to define what is protected under copyright law and what is simply an abstract idea regarding computer programs. Judge Learned Hand noted that "[n]obody has ever been able to fix that boundary, and nobody ever can." *Nichols v. Universal Pictures Co.*, 45 F.2d 119, 121 (2d Cir. 1930). Thirty years later Judge Hand concluded "[o]bviously, no principle can be stated as to when an imitator has gone beyond copying the 'idea,' and has borrowed its 'expression.'" *Peter Pan Fabrics, Inc. v. Martin Weiner Corp.*, 274 F.2d 487, 489 (2d Cir. 1960). Instead, no bright line test exists and "[d]ecisions must therefore inevitably be ad hoc." *Id.*

In 1986, the Third Circuit in *Whelan Associates, Inc. v. Jaslow Dental Laboratory, Inc.*, tried in vain to utilize the idea/expression dichotomy with software programs. 797 F.2d 1222, 1237 (3d Cir. 1986). The court was tasked with determining which aspects of a computer program were ideas and which were expression. *Id.* at 1234. The court observed "the purpose or function of a utilitarian work would be the work's idea, and everything that is not necessary to that purpose or function would be part of the expression of the idea." *Id.* at 1236. This attempt to simplify an already impossible examination with an even more complicated series of tests was immediately criticized by subsequent courts and even the academic community at large. See *Broderbund Software Inc. v. Unison World, Inc.*, 648 F.Supp. 1127, 1133 (N.D. Cal. 1986); *Plains Cotton Co-op v. Goodpasture Computer Serv., Inc.*, 807 F.2d 1256, 1262 (5th Cir.) *cert. denied*, 484 U.S. 821 (1987); See generally Steven R. Englund, Note, *Idea, Process, or Protected Expression?: Determining the Scope of Copyright Protection of the Structure of Computer Programs*, 88 MICH.L.REV. 866, 867-73 (1990).

Seeing the *Whelan* court's failed attempt, in 1992 the Second Circuit created the abstraction-filtration-comparison test in *Computer Associates International v. Altai* as an attempt to clarify some of the confusion surrounding the idea/expression dichotomy for computer program protection. 982 F.2d 693, 707 (2nd Cir. 1992). According to the Second Circuit, *Whelan*'s approach of separating idea from expression in computer programs "relies too heavily on metaphysical distinctions" and "a satisfactory answer to this problem cannot be reached by resorting, a priori, to philosophical first principals." *Id.* at 706. The *Altai* case involved a copyright infringement claim where the defendant enlisted clean room programmers[2] to produce code designed to operate like the plaintiff's code. *Id.* at 700. The Second Circuit implemented a new substantial similarity test to determine whether the defendant had infringed the plaintiff's protected expression, as opposed to permissibly using the unprotectable ideas. *Id.* at 701. That is, the court applied the abstraction-filtration-comparison test, which offers one way to determine which aspects of the computer program involve ideas and which are expressions. Ultimately, no copyright infringement was found as a result in that case.

It is instructive to appreciate the complexity that is involved in distinguishing protectable subject matter from abstract ideas in the copyright context under this test. First, the abstraction step of the abstraction-filtration-comparison test requires that "a court should dissect the allegedly copied program's structure and isolate each level of abstraction contained within it." *Id.* at 707. The implementation begins with the lowest level of abstraction, the physical code, and ends with the highest level of abstraction, the program's ultimate function. *Id.*

Once the levels of abstraction have been determined and separated, the filtration step is then used to separate protectable expressions from non-protectable material. *Id.* A "successive filtering method" is first implemented to "examine the structural components at each level of abstraction." On a per level basis, particular inclusions are determined to be "[an] 'idea' or . . . dictated by considerations of efficiency, so as to be necessarily incidental to that idea." *Id.* Courts must consider the "structural content of an allegedly infringed program for elements that might have been dictated by external factors." *Id.* at 710. Courts must also consider elements dictated by efficiency through examining "'whether the use of this particular set of modules is necessary efficiently to implement that part of the program's process' being implemented." *Id.* at 708. If the court finds elements dictated by efficiency, then "the expression represented by the programmer's choice of specific module or group of modules has merged with their underlying idea and is unprotected." *Id.* Courts must then filter out unprotectable material that is determined to be "free for the taking and cannot be appropriated by a single author even though included in a copyrighted work". *Id.* at 710.

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[2] Programmers with no direct access to the original code.

Finally, the comparison step occurs once courts have filtered out "all elements of the allegedly infringed program which are 'ideas' or are dictated by efficiency or external factors, or taken from the public domain." *Id.* at 710. What remains is considered the "core of protectable expression." *Id.* This 'core of protectable expression' is then compared to the alleged infringing work to determine whether the defendant copied any aspect of the protected expression. *Id.* If all similarities in expression arise from external factors, elements of efficiency, or use of common ideas, then no substantial similarity can be found. *Data East USA, Inc. v. Epyx, Inc.*, 862 F.2d 204, 208 (9th Cir. 1988).

One year after the *Altai* decision, the Tenth Circuit reaffirmed the abstraction-filtration-comparison test in *Gates Rubber v. Brando Chemical*. 9 F.3d 823, 830 (10th Cir. 1993). The court in *Gates Rubber* divided the levels of abstraction into six categories: "(i) the main purpose, (ii) the program structure or architecture, (iii) modules, (iv) algorithms and data structures, (v) source code, and (vi) object code." *Id.* at 835. The imposition of abstraction levels allows for some generalities regarding filtering. For example, the program's purpose, the highest level of abstraction, will generally always be filtered out because it is simply an abstract idea. Similarly, the object code, the lowest abstraction, if copied, will generally always lead to copyright infringement. However, the intermediate levels require complex and ad hoc filtering examination.

While the abstraction-filtration-comparison test likely constricted the unfixable boundary analogized by Judge Hand in *Nichols*, it is still far from concrete. Furthermore, the additional levels of analysis provide even more opportunity for uncertainty. In stark contrast, prior patent law has successfully steered clear of the complexities and vague procedures that have hindered copyright abstraction analysis. Patents, on the other hand, have claims that are intended to provide just such a bright line. Whereas the abstraction-filtration-comparison test determines what is protected and what is an abstract idea for copyright infringement, a potential patent infringer need only construe the patent's claims for notice of protected subject matter. As best stated in *Warner-Jenkinson Co., Inc. v.*

Hilton Davis Chemical Co., "[t]he presumption we have described . . . gives proper deference to the role of claims in defining an invention and providing public notice." 520 U.S. 17, 33-34 (1997).

The Federal Circuit's decision threatens to transform patentable subject matter analysis from a once bright-line rule to a complicated and seemingly impossible analysis. By requiring a process to meet its arbitrary machine-or-transformation test, the Federal Circuit has rejected this Court's definition of patentable subject matter: "anything under the sun that is made by man" except "laws of nature, natural phenomena, and abstract ideas." *Diamond v. Diehr*, 450 U.S. 175, 182, 185 (1981). This test now requires District Courts, and even examiners at United States Patent and Trademark Office (USPTO), to determine whether a process passes the complex machine-or-transformation test.

How can we possibly expect USPTO examiners and District Courts to distinguish abstract processes from process that satisfy the machine-or-transformation test when this Court has noted its own struggles in examining this issue? Dissenting from the Court's dismissal in *Laboratory Corp. of American Holdings v. Metabolite Laboratories, Inc.*, Justice Breyer conceded the difficulty of defining non-patentable subject matter such as mental processes and abstract intellectual concepts. 548 U.S. 124, 134 (2006). Drawing this conclusion, he analogized those categories of subject matter to similar categories within copyright law. *Id.* To support his contention, Justice Breyer cited *Nichols v. Universal Pictures Corp.*: "[W]e are as aware as anyone that the line [between copyrighted material and non-copyrightable ideas], wherever it is drawn, will seem arbitrary." *Id.* Further, Justice Breyer recognized that "all conscious human interaction involves a mental process" and as such "many a patentable invention rests upon its inventor's knowledge of natural phenomena," and "many 'process' patents seek to make abstract intellectual concepts workably concrete." *Id.* Much as copyright law's approach to determining protectable material resides in a quagmire of uncertainty, Justice Breyer's recognition reveals that a similar approach to patents would create similar confusion.

In truth, words are themselves abstractions of reality, so it is logically futile, or at least immensely problematic, to attempt to use abstractions to define meaningful and workable distinctions between different types of abstractions, or between unprotectable "fundamental principles" and protectable "applications" of those principles. Indeed, the words "fundamental principle" and "application of a fundamental principle" can almost always be applied to the same claim terminology since there usually exist both higher and lower levels of abstraction in most situations, regardless of the context. This Court is urged not to make the mistake of attaching additional words that beg further definitions, such as merely claiming a "result" or "effect," since such scope analyses are more appropriately handled under Title 35 U.S.C. § 102 novelty and §103 obviousness. Similarly, claims also should not be considered abstract simply because of their vagueness or lack of specificity since such analyses are more appropriately handled under Title 35 U.S.C. § 112.

As such, the Federal Circuit's holding creates a further undefinable standard that brings the once concrete patentable subject matter analysis an unfixable boundary similar to that between abstract idea and expression that currently haunts copyright law. Instead, the Court should stick very close to the statutory phrase "useful process" for evaluating the statutory subject matter question for processes. This Court should leave behind all other abstractions of abstractions.

II. A BROAD, JUDICIALLY-MADE § 101 TEST WILL PRECLUDE PATENTS AND STIFLE INNOVATION FOR NEW TECHNOLOGY IN THE UNPREDICTABLE FIELDS

A. The Federal Circuit's decision negatively affects biotechnologies, not simply business methods

It will be difficult to apply the machine-or-transformation test to biotechnology inventions, where patentable subject matter challenges often allege preemption of a natural phenomena or law of nature. In *Classen Immunotherapies, Inc. v. Biogen IDEC*, claims were directed to methods for determining an optimal immunization schedule by comparing the observed incidence of immune-mediated disorders in treatment groups subjected to different vaccination schedules. 304 Fed. Appx. 866, 866 (Fed. Cir. 2008); *Classen Immunotherapies, Inc. v. Biogen IDEC*, 2006 WL 6161856 at *1 (N.D. Md. Aug. 16, 2006). The Federal Circuit summarily applied its new machine-or-transformation test to find the claims to be outside the scope of § 101. *Classen*, 304 Fed. Appx at 866. Unfortunately, the court provided no framework for future analyses. This § 101 test is clearly incompatible with many biotechnology inventions, as they do not require machines (in the customary way of thinking about machines). However, the claims do arguably involve a transformation. Claim 1 of the *Classen* patent recites a "method . . . which comprises immunizing mammals in the treatment group of mammals with one or more doses of one or more immunogens." The immunization of a mammal clearly effects a transformation of a particular article (a mammal) into a different state (a state of induced immunity).

Classen is a good demonstration that the machine-or-transformation test fails to function in the unpredictable fields.

B. Sections 102, 103, and 112 of the Patent Act provide sufficient guidance for determining patentability in the unpredictable fields

For an inventor to be entitled to a patent on a claimed invention, the inventor must, at the very least, meet the utility, novelty, non-obviousness, and disclosure requirements of sections 101, 102, 103, and 112 of the Patent Act. It is important to emphasize that the issue in this case is only whether a claimed invention is statutory subject matter under § 101.

Recently, this Court considered addressing the merits of a § 101 dispute and clarifying what is patentable in *Lab. Corp.* 548 U.S. at 124. This Court granted certiorari but dismissed the case before reaching the merits. *Id.* Wishing to address the merits, three dissenting justices objected to the claimed process as being unpatentable. *Id.* at 133. Writing for the dissent, Justice Breyer stated: "[The patent] embod[ies] only the correlation between homocysteine and vitamin deficiency that the researchers uncovered. In my view, that correlation is an unpatentable 'natural phenomenon,' and I can find nothing in [*Lab. Corp.*'s] claim 13 that adds anything more of significance." *Id* at 137-138.

Specifically, *Lab. Corp.*'s claim 13 recites:

> A method for detecting a deficiency of cobalamin or folate in warm-blooded animals comprising the steps of:
>
> assaying a body fluid for an elevated level of total homocysteine; and
>
> correlating an elevated level of total homocysteine in said body fluid with a deficiency of cobalamin or folate.

Id at 129.

Although Justice Breyer determined that *Lab. Corp.*'s claim 13 was unpatentable as being a "phenomenon of nature," he conceded that categorizing non-patentable "phenomena of nature" is difficult. *Id.* Considering then the difficulty of categorizing non-patentable "phenomena of nature," it stands to reason that Justice Breyer's thoughtful concern as to the patentability of *Lab. Corp.*'s claim 13 may be misplaced.

In *Lab. Corp.*, there was a specifically tailored use derived from the phenomena by the creativity of man. This was why the lower courts *and* the USPTO affirmed the validity of the claim, illustrating further that the issue of patentability is better dealt with through novelty, obviousness and written description inquiries. In addition, the patent owner, Competitive Technologies, Inc., subsequently initiated reexamination in the USPTO. *Id.* at 128; *Ex parte Competitive Technologies, Inc.*, Appeal No. 2009-005519 (B.P.A.I. July 30, 2009). Upon reexamination of the patent, the Board of Patent Appeals and Interferences (BPAI) reversed the examiner's § 103 rejection. *Ex parte Competitive Technologies, Inc.*, Appeal No. 2009-005519. Determining that the claims are patentable under § 103, this decision by the BPAI provides evidence that sections 102, 103, and 112 of the Patent Act provide sufficient guidance for determining patentability in the unpredictable fields.

In *Ariad Pharms., Inc. v. Eli Lilly & Co.*, the Federal Circuit found that the claims were invalid for violating the written description requirement of § 112. 560 F.3d 1366, 1376 (Fed. Cir. 2009). *Ariad Pharms* and *Classen* together demonstrate that reviewing patentability through §§ 102, 103, and 112 provides clearer guidance than a § 101 analysis. That is, the Federal Circuit provided clear standards for reviewing written description and enablement standards in *Ariad Pharms* but failed to articulate the application of the machine-or-transformation test to unpredictable arts in *Classen*. This Court faces the question of whether a judge-made test is appropriate, or for that matter necessary, in light of other statutory tests that are clear, articulate, and well established, especially in the unpredictable arts where scientific advances are, by definition, unpredictable and likely to suffer from rigidly applied tests.

Finally, the timing delay implications for ad hoc determinations of statutory subject matter can be particularly harmful for biotechnology inventions. In hearings by the Federal Trade Commission on Intellectual Property in the Marketplace, Assistant Vice Chancellor for Intellectual Property & Industry Research Alliances Carol Mimura stated that "in the area of early-stage patents . . . these [biotechnology] patents are very crucial to the success of start-up companies that are spawned from university research." Federal Trade Commission hearings, The Evolving IP Marketplace: The Operation of IP Markets, 6 Monday, May 4, 2009. The patent application in the present case was filed in 1997. Twelve years have transpired, and the ad hoc analysis continues. When patents are so important to the growth of entire industries, the determination of patent eligibility—a gateway question—must be clear.

III. AMBIGUITY IN THE FEDERAL CIRCUIT'S NEW MACHINE-OR-TRANSFORMATION TEST HAS ALREADY FOSTERED HARMFUL CONFUSION AND UNCERTAINTY IN THE CASE LAW AND USPTO APPEALS THAT HAVE FOLLOWED

The Federal Circuit's decision held that processes not transforming a particular article must be tied to a particular machine. *In re Bilski*, 545 F.3d at 954. However, the Federal Circuit declined to offer guidance on what is meant by "particular machine," including the question of whether reciting particular software suffices to tie a process to a particular machine. *Id.* at 962.

Prior to the Federal Circuit's decision, it had been well-settled law that a computer programmed with particular software was patentable subject matter. *In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994). In the front-page holdings, the Federal Circuit expressly "abrogated" *Alappat* by name. *In re Bilski*, 545 F.3d at 943. However, the only negative treatment offered in the body of the opinion was directed toward *Alappat's* role in establishing the "useful, concrete and tangible result" test, from which the Federal Circuit now departs. *Id.* at 959. No mention was made regarding *Alappat's* guidance on machines particularized by programming, despite Judge Newman's dissent urging the majority to clarify what exactly was being abrogated. *Id.* at 994. The majority simply left the question to future cases. *Id.* at 962.

The Federal Circuit again declined to provide clarity in *In re Comiskey*. 554 F.3d 967 (Fed. Cir. 2009). Faced with an arbitration system implemented with various software modules and a database, the court held that "under the broadest reasonable interpretation" the system represented a machine. *Id.* at 981. However, the Federal Circuit panel nevertheless remanded to the USPTO for determining whether the system claims were statutory as machines. *Id.* at 971. Dissenting from the *en banc* decision, Judge Moore sharply criticized the majority for remanding the case on this issue since *In re Bilski*, in her opinion, did not affect whether machine claims were statutory under *Alappat*. *In re Comiskey*, 89 U.S.P.Q.2d 1641, 1650 (Fed. Cir. 2009).

The result of this ambiguity has been confusion and conflict in the USPTO and lower courts, with rampant uncertainty for American inventors. The USPTO still seems to regard particularized software as sufficiently particularizing a machine for § 101 purposes. In *Ex parte Cornea-Hasegan*, the Board of Patent Appeals and Interferences considered a method for routing computations to either software or specialized hardware, based on which of the two would be best suited for the task. 89 U.S.P.Q.2d 1557, 1558 (B.P.A.I. 2009). The BPAI rejected the claims for merely reciting a "processor" because a general purpose processor is not patentable when programmed in an "unspecified manner." *Id.* at 1560-61. Subsequent BPAI decisions reiterated that claims reciting a general purpose processor are unpatentable unless they specify the manner of programming with particularity. *See, e.g., Ex parte*

Gutta, 2009 WL 112393 (B.P.A.I. Jan. 15, 2009); *Ex parte Barnes*, 2009 WL 164074 (B.P.A.I. Jan 22, 2009). Additionally, in *Ex parte Atkin*, the BPAI established that sufficient particularity may exist when referring to the patent specification via means-plus-function language. 2009 WL 247868 at *9 (B.P.A.I. Jan. 30, 2009).

Fissures have also emerged at the district court level as judges attempt to decipher the new landscape. In March of 2009, the Northern District of California granted summary judgment in an infringement action involving a process for detecting credit card fraud in online transactions. *CyberSource Corporation v. Retail Decisions, Inc.*, 620 F.Supp.2d 1068, 1071, 1081 (N.D.Cal. 2009). Judge Patel viewed *Bilski* as abrogating more than those portions of *Alappat* that laid the foundation for *State Street's* "useful, concrete and tangible result" test. *Id.* at 1080-81. Indeed, she viewed *all* portions of *Alappat* as abrogated entirely, including the software question which the Federal Circuit's decision in *In re Bilski* expressly deferred to future cases. *Id.* at 1080-81.

This view has carried a weight inordinate to a lone California district court ruling. Judge Patel was shortly thereafter invited to sit by designation on the Federal Circuit bench, authoring the panel decision for *Wavetronix LLC v. EIS Electronic Integrated Systems*. 2009 WL 2245213 (Fed. Cir. 2009). Judge Patel's views on *In re Bilski* and *Alappat* may thus have more in common with the direction in which the Federal Circuit is headed.

Even so, Judge Patel's neighboring district gave little deference to this *CyberSource* view three months later. In *DealerTrack, Inc. v. Huber*, the Central District of California granted summary judgment against the patentee in an infringement action involving an automated credit approval process for automotive dealers. 2009 WL 2020761 at *1 (C.D.Cal. 2009). The court correctly noted that *Bilski* declined to adopt any new broad exclusion over software, and that it has been well-settled law that "a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software." *Id.* at *3 (citing *In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994)).

The Central District of California acknowledged the *CyberSource* court's holding that a process performed "over the Internet" does not satisfy the "machine" rubric of *Bilski*. *Id.* But the court rejected the view that particularized programming on a general purpose computer is no longer patentable subject matter. *Id.* at *4. The court's determination of invalidity was expressly based on the finding that DealerTrack's patent did not specify the programming with sufficient particularity to meet the discussed *Alappat* standard. *Id.*

None of the present uncertainty is proper in light of the plain language of § 101 and subsequent legislative treatment of the statute, nor is it necessary to meet the policy considerations behind this Court's precedent upon which the Federal Circuit relied. At each step of the way in the Federal

Circuit's analysis, the question of preempting abstract ideas and other fundamental principles was presented as the underlying Supreme Court concern. *See Diamond v. Diehr*, 450 U.S. 175, 187 (1981) ("[the inventors] do not seek to pre-empt the use of that equation"); *Gottschalk v. Benson*, 409 U.S. 63, 72 (1972) ("the patent would wholly pre-empt the mathematical formula").

In broad terms, the preemption question is already addressed by code sections pertaining to anticipation, obviousness, and overbreadth. In the specific field of software, it is addressed by *Alappat* and its requirement that only *particular* software can render patentable a process performed by general purpose computers. By requiring inventors to claim with particularity the "how and why" of their software-driven inventions, other practitioners remain free to practice non-infringing methods of achieving the same result. Any underlying abstract ideas are not monopolized or removed from the public domain. At the same time, the patentee is rewarded with limited-term protection for contributing a particularly innovative means for achieving the result to the public knowledge.

The Federal Circuit may be wary of emerging technologies and unsure as to whether the USPTO can successfully adapt to avoid issuing patents for inventions that are anticipated, obvious, or overly broad. However, the BPAI decisions discussed *supra* illustrate that the USPTO is fully versed in *Alappat* guidance and equipped to bar those patents that do not claim the "hows and whys" with particularity sufficient to avoid preemption.

If the problem is a lag between the emergence of new technologies and the sources with which subject-matter experts may search prior art, then the solution is more resources for the subject-matter experts to shorten this lag. The Federal Circuit's chosen alternative, fabricating a new restrictive § 101 standard, treats the skin rash with amputation. Matters are made even worse when ambiguity and silence leave questions as to what exactly has been amputated.

CONCLUSION

Between the conflicting views of the BPAI and lower courts and the ambiguity of the new exclusive test from the Federal Circuit, the owners of tens if not hundreds of thousands of patents now sit in limbo regarding the legal status of their intellectual property. Businesses and individual inventors are clouded by uncertainty as to whether they would receive the protection needed to recoup investment in new innovation. Without the finality provided by the customary presumption of patent validity, opportunities for sale or licensing diminish as the limited window of each patent's protection dwindles. Legal practitioners have no way to advise clients when rigid-yet-ambiguous new § 101 rules place a question mark atop wide swaths of the patent landscape, and America's leadership in global innovation suffers as a result.

Neither the plain language of § 101 nor the cited Supreme Court precedent support the new, exclusive Federal Circuit standard. Further, other statutory tools are readily available to protect the policy concerns of overly broad preemption. This Court should therefore rely on those tools and quiet the confusion and uncertainty imposed by the Federal Circuit's decision below by reversing that decision.

Respectfully submitted,

JOEL H. THORNTON
Counsel of Record
THE THORNTON FIRM
P.O. Box 129
Rome, GA 30162
706-266-6836

JEFFREY R. KUESTER
THOMAS, KAYDEN,
HORSTEMEYER & RISLEY,
L.L.P.
600 Galleria Parkway SE
Suite 1500
Atlanta, GA 30339
(770) 933-9500

AMICUS
CURIAE
BRIEF

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IN THE
Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,
v.

DAVID J. KAPPOS, UNDER SECRETARY OF COMMERCE
FOR INTELLECTUAL PROPERTY AND DIRECTOR OF THE
UNITED STATES PATENT AND TRADEMARK OFFICE,
Respondent.

**ON WRIT OF CERTIORARI TO THE
UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT**

BRIEF FOR BANK OF AMERICA CORPORATION, BARCLAYS CAPITAL INC., THE CLEARING HOUSE ASSOCIATION L.L.C., THE FINANCIAL SERVICES ROUNDTABLE, GOOGLE INC., METLIFE, INC., AND MORGAN STANLEY AS AMICI CURIAE IN SUPPORT OF RESPONDENT

WILLIAM F. LEE
DONALD R. STEINBERG
WILMER CUTLER PICKERING
HALE AND DORR LLP
60 State Street
Boston, MA 02109
(617) 526-6000

SETH P. WAXMAN
Counsel of Record
RANDOLPH D. MOSS
CATHERINE M.A. CARROLL
ANNIE L. OWENS
WILMER CUTLER PICKERING
HALE AND DORR LLP
1875 Pennsylvania Ave., N.W.
Washington, D.C. 20006
(202) 663-6000

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INTEREST OF AMICI CURIAE[1]

Amici are leading companies and associations in the financial services and information technology industries.[2] Amici share a grave concern about the threat to innovation posed by the issuance of patents on abstract ideas, like the claim at issue in this case. Patents on methods of doing business and abstract software processes significantly affect the financial services and information technology industries because, rather than encouraging innovation, they monopolize the very mental processes and ideas that are the building blocks of innovation.

Moreover, the recent flood of patents on business methods and software—which has expanded the bounds of patentable subject matter beyond what is fairly encompassed by the statutory bases for patent protection—has resulted in uncertainty and an explosion of expensive litigation. Most significantly, amici are affected by those who patent abstract ideas or methods (or purchase such patents) not to make productive use of them, but to extract licensing fees from businesses that apply and improve those ideas and methods in real-world products and services. Conducting business in such a climate leads to costly litigation and the unproductive diversion of resources. Amici accordingly support the recognition of clear, threshold rules that prevent the patenting of abstract methods and mental processes like petitioners' and that discourage costly and counterproductive litigation.

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[1] Letters consenting to the filing of amicus briefs have been filed by the parties with the Clerk of the Court. No counsel for a party authored this brief in whole or in part, and no person, other than amici, their members, or their counsel made a monetary contribution to the preparation or submission of this brief.

[2] Amici include Bank of America Corporation, Barclays Capital Inc., The Clearing House Association L.L.C., The Financial Services Roundtable, Google Inc., MetLife, Inc., and Morgan Stanley. The Financial Services Roundtable joins this brief in its organizational capacity, and this brief does not necessarily represent the views of all its individual members.

SUMMARY OF ARGUMENT

Distilled to its essence, petitioners' patent application claims nothing more than the idea of hedging against the weather. This Court's cases interpreting Section 101 of the Patent Act, 35 U.S.C. § 101, have never recognized such a claim to recite patent-eligible subject matter. Nor is similar subject matter, like accounting methods, tax mitigation techniques, financial instruments, and other means of organizing human behavior—or software used to implement those methods—patent-eligible. Petitioners' argument to the contrary would disturb long-settled precedent and pose substantial threats to innovation in the financial services and information technology fields.

Innovation has long flourished in financial services and information technology, even though patents for business methods and software have only recently become commonplace. Indeed, the recent explosion in such patents has hindered, rather than encouraged, innovation. Due to their broad, abstract nature, such patents are particularly likely to invite expensive litigation and other costs, which creates substantial uncertainty and risk for companies wishing to develop and implement new business strategies, financial structures and processes, or software. Expanding the scope of patent-eligible subject matter to include abstract ideas or mental processes of the sort petitioners claim will only aggravate these drags on innovation, and would thus undermine the core purpose of the Patent Act—to "promote the Progress of Science and useful Arts." U.S. Const. art. I, § 8, cl. 8.

To avoid a construction of the Patent Act that would permit the grant of a monopoly on the building blocks of innovation, this Court has long held that the word "process" in Section 101 cannot be interpreted literally: a fundamental principle or mental process is not patent-eligible even if it may be reduced to a series of steps one might call a "process." Similarly, a claim embodying an abstract idea or mental process does not become patent-eligible simply by limiting the application of the idea to a particular field, or by adding conventional post-solution activity or the conventional use of a machine, including a computer. To hold otherwise would "exalt[] form over substance" and permit patent applicants to evade the limits on patenting abstract ideas through clever draftsmanship. *Parker* v. *Flook*, 437 U.S. 584, 590 (1978). Rather, "the clue" to patent-eligibility is whether a process results in physical transformation or reduction of an article to a different state or thing. *Gottschalk* v. *Benson*, 409 U.S. 63, 70 (1972). Where such transformation does not occur, the Court has recognized processes to be patent-eligible only when the claim, considered as a whole, is necessarily tied to the non-conventional use of a machine.

To resolve this case—and to provide needed clarity regarding the scope of patentable subject matter—this Court need only reaffirm these long-established precepts. Continued adherence to these useful and workable principles will neither expand nor contract the scope of patent-eligible subject matter under Section 101. Nor do these precepts preclude, as petitioners contend, the patent laws from adapting to future innovation. While this Court has recognized that no rule should wholly foreclose future applications of the patent laws that might accommodate unforeseen technological advancements of the kind the Patent Act was adopted to promote, that recognition provides no reason to depart from long-settled principles when dealing with mental processes and types of subject matter, like that at issue in this and similar cases, that have existed since the time of the first Patent Act.

ARGUMENT

I. THIS COURT SHOULD REAFFIRM LONG-SETTLED PRINCIPLES OF PATENT LAW THAT EXCLUDE ABSTRACT IDEAS AND MENTAL PROCESSES FROM PATENT-ELIGIBILITY

Although petitioners and their amici posit that the court of appeals created from whole cloth a new test for patent-eligibility, just the opposite is true. The decision below rests on long-settled tenets of patent law that properly exclude abstract ideas and mental processes—including, in the Solicitor General's words, "methods of organizing human activity," U.S. Br. 8—from patent-eligibility. This rule is consistent with precedent and the Patent Act's core purpose of encouraging innovation.

A. Consistent With The Patent Act's Purpose Of Promoting Innovation, Abstract Ideas Are Not Patent-Eligible "Processes" Under Section 101

Section 101 of the Patent Act provides that "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof" is patent-eligible, "subject to the conditions and requirements of this title." Although the earliest iterations of the Patent Act extended patent protection to "any new and useful art, machine, manufacture, or composition of matter," 1 Stat. 318, 319 (1793), it was understood at that time that processes can be patent-eligible under the general term "useful art," *see Corning* v. *Burden*, 56 U.S. (15 How.) 252, 267 (1854).

For just as long, however, this Court has recognized that the key policy underlying the Patent Act—the promotion of innovation—serves as a fundamental limitation on patent-eligibility. *See generally Graham* v. *John Deere Co. of Kansas City*, 383 U.S. 1, 5-6 (1966). Article I, Section 8 of the Constitution restricts the patent power to the promotion of the "Progress of Science and useful Arts"—what "today [is] called technological innovation." *In re Comiskey*, 554 F.3d 967, 977 (Fed. Cir. 2009) (internal quotation marks omitted). The determination of patent-eligibility under Section 101 must be made by reference to this constitutional standard. *Graham*, 383 U.S. at 5-6. Because patents create a narrow exception to the general public policy against monopolies, any grant of such a monopoly must further the constitutional purpose behind the Patent Act by promoting, rather than hindering, innovation. *See id.*

Consistent with the Patent Act's constitutional underpinnings, this Court has repeatedly emphasized that not every method or idea is a "process" eligible to be patented within the meaning of Section 101. *See, e.g.*, *Parker* v. *Flook*, 437 U.S. 584, 588-589 (1978). Although petitioners contend (*e.g.*, Br. 18-20) that the meaning of "process" should be construed without bounds, it is well established that the term as used in Section 101 has a narrower scope than "'process' in the ordinary sense of the word." *Flook*, 437 U.S. at 588; *see id.* at 589 (this Court's precedent "forecloses a purely literal reading of

§ 101"); *Corning*, 56 U.S. (15 How.) at 268 ("[T]he term process is often used in a more vague sense, in which it cannot be the subject of a patent.").[3]

In particular, the meaning of "process" is limited by the recognition that "abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work." *Gottschalk* v. *Benson*, 409 U.S. 63, 67 (1972); *see also Rubber-Tip Pencil Co.* v. *Howard*, 87 U.S. (20 Wall.) 498, 507 (1874); *Corning*, 56 U.S. (15 How.) at 267-268; *Le Roy* v. *Tatham*, 55 U.S. (14 How.) 156, 175 (1853). Rather than promoting innovation, the grant of monopolies on abstract ideas and similar principles removes those general concepts, the building blocks of innovation, from the public domain. *Graham*, 383 U.S. at 9 n.2 ("'That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, and improvement of his condition, seems to have been peculiarly and benevolently designed by nature[.]'" (quoting VI *Writings of Thomas Jefferson* 180-181 (Henry A. Washington ed. 1861)). Abstract ideas, natural phenomena, and mathematical algorithms "are part of the storehouse of knowledge of all men," *Funk Bros. Seed Co.* v. *Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948), and thus "not the kind of 'discoveries' that the statute was enacted to protect," *Flook*, 437 U.S. at 593; *see also id.* at 589; *Diamond* v. *Diehr*, 450 U.S. 175, 185 (1981); *Benson*, 409 U.S. at 71. The exclusion of such subject matters from patent-eligibility "reflects a basic judgment that protection in such cases, despite its potentially positive incentive effects, would too often severely interfere with, or discourage, development and the further spread of useful knowledge itself." *Laboratory Corp. of Am. Holdings* v. *Metabolite Labs., Inc.*, 548 U.S. 124, 128 (2006) (Breyer, J., dissenting from dismissal of the writ as improvidently granted).

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[3] To support their broad interpretation of Section 101, petitioners cite the legislative history of the 1952 Act, which states:

> A person may have "invented" a machine or a manufacture, which may include anything under the sun that is made by man, but it is not necessarily patentable under section 101 unless the conditions of the title are fulfilled.

S. Rep. No. 82-1979 (1952), *reprinted in* 1952 U.S.C.C.A.N. 2394, 2399. But as the Solicitor General has explained (U.S. Br. 28-29), when placed in proper context, that statement—which refers only to machines or manufactures, not processes—supports nothing more than the unremarkable proposition that, while all things made by man may be inventions, not all inventions may be patentable.

These essential limits on the patent-eligibility of processes were firmly in place by 1952, when Congress amended Section 101 to substitute the term "process" for the term "art" in the definition of patent-eligible subject matter. That amendment did not alter the historical understanding of the scope of patent protection. *Diehr*, 450 U.S. at 184. Rather, the amendment reaffirmed what this Court had already held—that a "process" is patent-eligible under Section 101—and left untouched the scope of that term as construed by this Court. *See* S. Rep. No. 82-1979 (1952), *reprinted in* 1952 U.S.C.C.A.N. 2394, 2398-2399; *see also Graham*, 383 U.S. at 3-4. By that time, it was clear that, in light of the Patent Act's constitutional purpose, an abstract "principle is not patentable." *Le Roy*, 55 U.S. (14 How.) at 175. Thus, a "process" claim that embodies no more than an abstract idea or principle is not patentable-eligible. *See Benson*, 409 U.S. at 67; *Rubber-Tip Pencil Co.*, 87 U.S. (20 Wall.) at 507.

B. A Claim Recites A Patent-Eligible Process, Rather Than An Unpatentable Abstract Idea, Where There Is A Physical Transformation Or The Process Is Tied To A Particular Machine Or Apparatus In A Non-Conventional Manner

Embracing a broad, literal interpretation of "process" that this Court has repeatedly rejected, *see, e.g.*, *Flook*, 437 U.S. at 588-589; *Corning*, 56 U.S. (15 How.) at 267-268, petitioners argue (Br. 20) that applying any particular test or rule to determine whether a "process" is patent-eligible would effectively "place additional limits on patent-eligible subject matter that have not been expressed by Congress." But "process" patents—unlike most patents on machines, manufactures, or other categories of patentable subject matter—are uniquely susceptible to the problem of claiming abstract ideas. Many abstract principles can be reduced to a series of steps that one might reasonably call a "process" within the literal meaning of that word. *See Metabolite Labs.*, 548 U.S. at 137 (Breyer, J., dissenting from dismissal of the writ as improvidently granted). And many abstract ideas, mental processes, or methods of organizing human activity can be described in the guise of conventional use of a computer or other machine, limited to a particular field, or dressed up as one step in a "method" or "system" leading to some token post-solution action.

This Court accordingly has recognized that "[t]he line between a patentable 'process' and an unpatentable 'principle' is not always clear." *Flook*, 437 U.S. at 589. To ensure that patents are not granted on "processes" that embody nothing more than abstract ideas or similarly unpatentable subject matter—and to avoid the consequent hindrance to innovation that such patents pose—this Court has set forth a number of precepts to guide courts in determining whether a process or method claim recites an abstract principle, idea, or mental process that is unpatentable under Section 101. Because those precepts—which date back at least 150 years—provide a principled, workable method to determine whether such a claim is patent-eligible, this Court should reaffirm and apply them in this case.

In particular, this Court has long asked whether the claimed process results in a physical transformation or is necessarily tied to a particular machine or apparatus in a non-conventional way. The conventional use of a machine or conventional post-solution activity is not sufficient to render an otherwise unpatentable idea patent-eligible.

1. Where a claimed process is not tied to the non-conventional use of a particular machine, "[t]ransformation and reduction of an article 'to a different state or thing' is *the* clue to ... patentability." *Benson*, 409 U.S. at 70 (emphasis added); *see also Diehr*, 450 U.S. at 192 (when a claim "perform[s] a function which the patent laws were designed to protect (*e.g.*, *transforming or reducing an article to a different state or thing*), then the claim satisfies the requirements of § 101." (emphasis added)); *Cochrane* v. *Deener*, 94 U.S. 780, 788 (1877) ("A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing.").

Examples of patent-eligible subject matter include such transformative processes as "[t]he arts of tanning, dyeing, making water-proof cloth, vulcanizing India rubber, [and] smelting ores." *Corning*, 56 U.S. (15 How.) at 267. Similarly, processes for refining flour, *Cochrane*, 94 U.S. 780; separating the component parts of fats and oils for use in soap manufacturing, *Tilghman* v. *Proctor*, 102 U.S. 707, 708-709 (1881); expanding metal through a particular method of cutting and stretching, *Expanded Metal Co.* v. *Bradford*, 214 U.S. 366 (1909); fermenting beer, *New Process Fermentation Co.* v. *Maus*, 122 U.S. 413, 428-429 (1887); incubating eggs, *Smith* v. *Snow*, 294 U.S. 1 (1935); *Waxham* v. *Smith*, 294 U.S. 20 (1935); and molding rubber, *Diehr*, 450 U.S. at 191, are all patent-eligible because they involve the requisite transformation or reduction of an article.

In *Diehr*, for example, this Court held that a process patent on a method for molding rubber that used a mathematical equation was patent-eligible because the method at issue involved more than a mere "mathematical formula," *see* 450 U.S. at 192 n.14, and more than "a new method of programming a digital computer in order to calculate ... the correct curing time in a familiar process," *id.* at 193 n.15 (internal quotation marks omitted). Rather, the application claimed a "process of curing rubber," *id.*—a process that, as this Court stressed, transformed "an article to a different state or thing," *id.* at 184 (internal quotation marks omitted). By contrast, this Court has invalidated patents on non-transformative processes that, at bottom, were simply attempts to patent an algorithm or mathematical equation. *See Flook*, 437 U.S. at 591; *Benson*, 409 U.S. at 70.

2. This Court has also upheld patents on non-transformative processes, but only where those processes, viewed as a whole, were necessarily tied to a particular apparatus in a non-conventional way. For example, in *O'Reilly* v. *Morse*, 56 U.S. (15 How.) 62 (1854), Samuel Morse submitted a patent application reciting various claims related to his use of electromag-

netism to transmit printed characters across long distances. This Court held unpatentable Morse's claim for the general principle of using the electromagnetic spectrum for printing at a distance, which was "not confine[d] ... to the machinery or parts of machinery, which he specifie[d]" in the application. *Id.* at 113 (noting that such a patent would "shut[] the door against inventions of other persons"). By contrast, Morse's patent on the process of using the telegraph to transmit characters at a distance in a particular way was patent-eligible. This Court explained:

> You may use electro-magnetism as a motive power, and yet not produce the described effect, that is, print at a distance intelligible marks or signs. To produce that effect, it must be combined with, and passed through, and operate upon, certain complicated and delicate machinery, adjusted and arranged upon philosophical principles, and prepared by the highest mechanical skill. ... And for the method or process thus discovered, [Morse] is entitled to a patent.

Id. at 117.

Similarly, in the *Telephone Cases*, 126 U.S. 1 (1888), this Court held that Alexander Graham Bell's process of transmitting sounds across long distances, which was necessarily tied to a particular apparatus, was patent-eligible. There, the claim was "not alone for the particular apparatus he describes, but for *the process that apparatus was designed to bring into use.*" *Id.* at 540 (emphasis added). Like Morse's patent on the use of the telegraph as a means to create a specific result, the role of the apparatus in the *Telephone Cases* was an integral part of the process as a whole, not simply an afterthought. And at the time, like Morse's use of the telegraph, Bell's use of the telephone was far from conventional.

3. Where a claimed process is unpatentable because it is neither transformative nor tied to the use of a machine in a non-conventional way, the mere form of a claim will not render the unpatentable principle patent-eligible. Specifically, adding the conventional use of a computer or machine or conventional post-solution activity is insufficient to save a claim reciting an otherwise unpatentable principle. Similarly, limiting the claim to the application of an abstract idea to a particular field or purpose does not suffice.

This Court has explained that it is "[t]he process itself, not merely the mathematical algorithm" or abstract idea that "must be new and useful." *Flook*, 437 U.S. at 591; *see also Diehr*, 450 U.S. at 188 (in determining patent-eligibility, "claims must be considered as a whole"). It follows that if a process uses an existing machine or apparatus, the actual *use of the apparatus* must be new; it is not enough simply to link an unpatentable principle to the conventional use of a computer or other machine as part of a "system" or series of steps recited in a claim. For instance, in *Benson*, the applicant attempted to patent an algorithm for converting binary code that could be performed by hand or by "existing computers long in use, no new machinery being necessary." 409 U.S. at 67. This Court rejected the applicant's argument that the conventional use of a computer rendered the algorithm a patent-eligible process, concluding that granting a patent on this method "in practical effect would be a patent on the algorithm itself," notwithstanding the fact that the process involved a machine. *Id.* at 72. Merely describing an otherwise unpatentable abstract method as a process that is performed by conventional software operations on a computer does not render that abstract idea patent-eligible, any more than using a calculator, slide ruler, or abacus in such a method would do so. *See id.* at 67-70.[4]

Similarly, drafting a claim in a manner that merely ties an otherwise unpatentable abstract idea to a specific end use or dressing up a claim by adding token or conventional post-solution activity "will not transform an unpatentable principle into a patentable process." *Diehr*, 450 U.S. at 191-192; *see also Flook*, 437 U.S. at 593 (calling "untenable" the "assum[ption] that if a process application implements a principle in some specific fashion, it automatically falls within the patentable subject matter of § 101"). Indeed, "[t]he notion that post-solution activity, no matter how conventional or obvious in itself, can transform an unpatentable principle into a patentable process exalts form over substance" because "[a] competent draftsman could attach some form of post-solution activity to almost any mathematical formula." *Id.* at 590; *see Diehr*, 450 U.S. at 192 ("To hold otherwise would allow a competent draftsman to evade the recognized limitations on the type of subject matter eligible for patent protection.").

In *Flook*, for example, this Court held that the claimed process—a method for updating alarm limits, the only novel part of which was a mathematical equation—was not patent-eligible merely because the applicant was able to identify "a limited category of useful, though conventional, post-solution applications" of that method. 437 U.S. at 585. The Court explained that application of that method to a specific, useful end—adjusting the alarm limit according to the equation—was insufficient to transform the algorithm into a patent-eligible process: "the Pythagorean theorem would not have been patentable, or partially patentable, because a patent application contained a final step indicating that the formula, when solved, could be usefully applied to existing surveying techniques." *Id.* at 590; *see id.* at 595 n.18 ("[A] claim for an improved method of calculation, *even when tied to a specific end use*, is unpatentable subject matter under § 101." (emphasis added)); *Diehr*, 450 U.S. at 191 (prohibition on patenting of mathematical formula "cannot be circumvented by attempting to limit the use of the formula to a particular technological environment").

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[4] By the same token, characterizing an invention that simply performs a series of abstract calculations or steps as a "system" or "computer program" just as clearly fails to satisfy Section 101 as a method claim that expressly recites those steps.

Consistent with these limiting principles, the Solicitor General acknowledges that adding the use of a computer as insignificant extra-solution activity does not render an unpatentable process patentable (U.S. Br. 34, 39 n.18), and that software claims that would preempt all uses of a mathematical algorithm are not patent-eligible (*id.* at 39 n.19). Yet the Solicitor General nevertheless suggests (at 38-39) that "most software" should be patent-eligible merely because it "could be said to concern the use of a machine (*i.e.*, the computer itself) or involve a transformation of matter (*i.e.*, the writing and re-writing of data [on] a hard disk or ... in a memory chip)."

This Court has never held, however, that the mere inclusion of software or a computer in an otherwise unpatentable series of steps may render that process patentable subject matter. In particular, under this Court's decisions in *Benson* and *Flook*, the fact that a process may involve the modification of electronic data or "concern the use" of a computer is not sufficient for patent-eligibility. In *Benson,* the method at issue "convert[ed] binary-coded decimal ... numerals into pure binary numerals" and was tied to use of "a general-purpose digital computer," 409 U.S. at 64, yet this Court held that the process was not patent-eligible, *id.* at 67-72.[5] The process at issue in *Flook* similarly was "primarily useful for computerized calculations producing adjustments in alarm settings," and thus could be said to have contemplated the transformation of electronic data, yet was not patent-eligible. 437 U.S. at 585-586. (In *Diehr*, by contrast, the process was patent-eligible because it transformed rubber from one state to another, not because it used a computer and manipulated electronic data. 450 U.S. at 184.) Moreover, applying this Court's precedent to software in the manner the Solicitor General suggests would render the limiting principles articulated in that precedent virtually meaningless, as any "competent draftsman" could easily add the use of a computer or the manipulation of electronic data to an otherwise non-patent-eligible process. *Flook*, 437 U.S. at 590. Rather, an otherwise unpatentable business strategy or transaction that transforms no particular article cannot be rendered patent-eligible merely by reciting the conventional use of a computer (or, similarly, the Internet, a telephone, or email) to implement that series of mental steps.

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[5] The government would distinguish *Benson* on the ground that a patent may not "preempt the public's access to basic mathematical principles." U.S. Br. 39 n.19. But if an unpatentable mathematical principle may not be rendered patent-eligible by tying the claim to the use of a computer, the same should hold true for an unpatentable abstract idea or "method of organizing human activity" that is tied to the conventional use of a computer. Although the government concedes that the method of hedging risk at issue in this case would not be rendered patent-eligible by merely reciting that a computer is used to make the necessary calculations, *id.* at 52-53, it suggests that a different result might apply if the use of the computer was "central to the process of hedging," *id.* at 53, n.30. That formulation, however, fails to recognize that the addition of the conventional use of a computer is no different than the use of a telephone or fax machine, and thus cannot render otherwise unpatentable subject matter patent-eligible. This is so even where the use of a computer, telephone, or fax machine is "central" to the claimed "process," such as where purchase orders are taken over the Internet, by phone, or by fax.

4. These well-established precepts provide clear, workable guidance and, contrary to petitioners' contention, do not preclude the patent laws from adapting to future innovation.[6] This Court has rightly recognized the need for flexible patent-eligibility criteria to ac-

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[6] Nor, as petitioners insist (at 29-34), are these precepts inconsistent with 35 U.S.C. § 273, which provides a defense to actions alleging infringement of "business method" patents. *See* U.S. Br. 46-51. Section 273 did not purport to alter the scope of patent-eligible subject matter under Section 101, nor did it abrogate the last 150 years of this Court's jurisprudence. "Business method" patents accordingly must satisfy the same patent-eligibility standards as any other process. To the extent petitioners argue (at 31) that Congress's failure to amend Section 101 to affirmatively abrogate the Federal Circuit's 1998 decision in *State Street Bank & Trust Co.* v. *Signature Financial Group, Inc.* represents congressional ratification of that decision, *see* 149 F.3d 1368 (Fed. Cir. 1998) (holding that business methods are eligible for patent protection), this Court has expressly cautioned against interpreting congressional inaction in such a manner. *See, e.g., Alexander* v. *Sandoval*, 532 U.S. 275, 292 (2001). Indeed, legislative history reveals that Section 273 was a reaction *against* the Federal Circuit's sweeping interpretation of Section 101. *See, e.g.*, H.R. Rep. No. 106-464, at 121-122 (1999) (Conf. Rep.); H.R. Rep. No. 106-287, pt. 1, at 47 (1999); 145 Cong. Rec. S14,986, S14,994 (daily ed. Nov. 19, 1999) (statement of Sen. Schumer).

commodate technological advancement of the kind the Patent Act and existing precedent might not have foreseen. *See, e.g., Flook*, 437 U.S. at 588 n.9; *Benson*, 409 U.S. at 71. Petitioners seize on the Court's acknowledgment of that need for flexibility to contend that any application of an abstract idea should be patent-eligible, and that the Court's case law leaves no room for any limit on the range of processes that may be patented. *E.g.*, Pet. Br. 20-21. But in stopping short of "hold[ing] that no process patent could *ever* qualify if it did not meet the requirements" of past precedent—*i.e.*, that the process "must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing'"—the Court did not open the door to the patenting of any and all subject matter that has existed since the time of the first Patent Act. *Benson*, 409 U.S. at 71 (emphasis added). Rather, the Court simply recognized that, while abstract ideas should never be patentable, its case law holding processes to be patentable only when physically transformative or tied to the non-conventional use of a particular machine would not necessarily foreclose the granting of a patent on a non-abstract process that involved an unforeseen kind of innovation that marked a true advance in the "Progress of Science and useful Arts." U.S. Const. art. I, § 8, cl. 8. This is not such a case.

C. Under This Court's Long-Established Precedent, Petitioners' Claim Fails To Recite Patent-Eligible Subject Matter Because It Is Nothing More Than An Abstract Idea

Although they dressed it up in details and technical terms, petitioners in fact seek to patent nothing more than the abstract idea of "managing the weather-related risks associated with energy pricing," JA10—or, in other words, hedging against the weather. That claim is not directed to patent-eligible subject matter under this Court's precedent: petitioners' claim does not transform or reduce an article to a different state or thing, nor is it tied in a non-conventional manner to a particular apparatus or machine. In arguing that the invention at issue is patent-eligible, petitioners merely highlight why the alternative approach they propose is unworkable and overly broad.

Petitioners argue their claim does not cover the abstract idea of hedging, but instead is patent-eligible because it recites a "specific series of steps involving the purchase and sale of commodities by an intermediary commodity provider to manage consumption risk costs." Pet. Br. 17; *see also id.* at 57-58. But as Justice Breyer has observed, "one can reduce *any* process to a series of steps. The question is what those steps embody." *Metabolite Labs.*, 548 U.S. at 137 (Breyer, J., dissenting from dismissal of the writ as improvidently granted). Here, as the court of appeals concluded, petitioners' claim embodies "a purely mental process of performing requisite mathematical calculations without the aid of a computer or any other device, mentally identifying those transactions that the calculations have revealed would hedge each other's risks, and performing the post-solution step of consummating those transactions." Pet. App. 36a; *see also* JA11-12 (claim involves calculating a fixed price based upon historical averages using well-known mathematical algorithms, "identif[ying]" market participants for whom that price would be desirable, and "initiat[ing]" transactions among those participants). That process is no less an abstract idea—and no more patentable—than one comprising the familiar morning ritual of consulting the newspaper to determine the weather forecast, mentally identifying whether an umbrella or sunglasses would best hedge against the risk of weather-related discomfort, and performing the post-solution step of carrying the chosen accessory to work.

Petitioners contend (Br. 17) that even if their claims comprise the abstract idea of hedging and an abstract mathematical formula, they should be patent-eligible because they are "practically applied" to manage weather-related risk in the sale and purchase of energy commodities. But that simply suggests a limitation on the field of application, and this Court has rejected the notion that otherwise unpatentable abstract ideas may be patented so long as the claimed process applies the idea to a particular field. *See Flook*, 437 U.S. at 589-590. Nor could petitioners save their claim from unpatentability by adding some token post-solution activity or describing it as a system that makes conventional use of computer software, a calculator, a telephone, or the Internet. *See id.* At bottom, because petitioners' claims reduce to nothing more than an abstract idea, they do not recite a process that "perform[s] a function which the patent laws were designed to protect." *Diehr*, 450 U.S. at 192.

II. ALLOWING ABSTRACT IDEAS SUCH AS PETITIONERS' CLAIMS TO BE PATENTED WOULD THREATEN INNOVATION

Although this Court has never held a process to be patentable that was neither transformative nor tied to a particular machine or apparatus in a non-conventional manner, petitioners and their amici argue that this Court must, for the first time, interpret "process" in Section 101 to encompass *any* practical application of an abstract idea in order to avoid hindering innovation in today's "knowledge economy." Br. 38; *see also id.* at 16. They sound the alarm that adherence to established precedent that looks to transformation of an article or the non-conventional use of an apparatus as the touchstones of patentability will "'diminish the incentives available to new enterprise.'" *Id.* at 39 (quoting Pet. App. 61a (Newman, J., dissenting)); *see also* Business Software Alliance Br. 2-3; International Business Machines Corp. Br. 19-23, 27-29. But, in fact, just the opposite is true. Abstract ideas are excluded from patent-eligibility precisely because allowing them to be patented would place the basic tools of innovation out of reach of those who would put them into use. As recent experience in the financial services and information technology industries confirms, departing from that principle in this case, as petitioners urge the Court to do, would pose a serious threat to innovation.

As amici can well attest, the recent surge in patents on abstract ideas such as how to run a business or software that merely implements such methods has not promoted innovation in the financial services or information technology fields—to the contrary, such patents create a drag on innovation.[7] Due to their abstract nature, patents of the sort petitioners seek are difficult to examine against prior art, provide fodder for unjustified exploitation and opportunistic behavior, and are overwhelmingly likely to lead to costly litigation. In the face of the proliferation of these patents, virtually any company that seeks to offer a new product or service faces the prospect of numerous licensing demands and expensive litigation based on claims to the building blocks of innovation, and must account for the potential cost of these risks, divert resources to obtain defensive patents of its own, or, in the worst case, forego innovation altogether. Thus, rather than promote innovation, the recent explosion in abstract patents claiming business or financial methods and software—and the spike in litigation associated with those patents—has presented a significant hindrance to innovation. Endorsing petitioners' proposed expansion of the scope of patent-eligible "process[es]" in Section 101 will only threaten further harm to innovation.

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[7] "[M]any scholars make little distinction between business method patents, internet patents, and software patents more broadly," because "many business method patents are in fact patents on the transfer of a known business method to a software and/or web-based implementation." Bronwyn H. Hall, *Business and Financial Method Patents, Innovation, and Policy*, National Bureau of Economic Research Working Paper No. 14868, at 2 (2009), *available at* http://www.nber.org/papers/w14868.

A. Petitioners' Overly Expansive Interpretation Of Patentable "Processes" Has Never Been Necessary To Promote Innovation

Since well before Congress enacted the first Patent Act, there has been no shortage of innovation in business, to say the least. That is so even though such ideas have not been the subject of significant patenting activity until recently. Petitioners' and their amici's prediction that innovation in the modern economy will be imperiled without patent protection for ideas of this type is thus without basis.

For much of this Country's history, it was generally believed that most business methods were not eligible for patent protection. *See, e.g., Hotel Sec. Checking Co.* v. *Lorraine Co.*, 160 F. 467, 467, 469 (2d Cir. 1908) ("system of transacting business" comprising a "'method of and means for cash-registering and account-checking' designed to prevent frauds and peculation by waiters and cashiers in hotels and restaurants" was "not, within the most liberal interpretation of the term, an art"). Even when the Patent Office began granting such patents with greater frequency beginning in the early 1970s, those patents were met with widespread doubt as to their validity. *See, e.g.*, Adam B. Jaffe & Josh Lerner, *Innovation and Its Discontents: How Our Broken Patent System Is Endangering Innovation and Progress, and What To Do About It* 117 (2004).

The modern flood of business method patents began in the 1990s with the Federal Circuit's 1998 decision in *State Street Bank & Trust Co.* v. *Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998). Although technically construing the claim before the court as a patentable machine, not a process, *see id.* at 1372; Pet. App. 23a n.18, the court of appeals took the occasion to overrule a line of cases holding business methods categorically ineligible for patenting under Section 101, *see* 149 F.3d at 1375. The *State Street* decision came to be "widely viewed as having opened the door to widespread business method patenting, especially financial methods." *See* Bronwyn H. Hall, *Business and Financial Method Patents, Innovation, and Policy*, National Bureau of Economic Research, Working Paper No. 14868, at 3 (2009), *available at* http://www.nber.org/papers/w14868; *see also* Clifford S. Stanford, *Business Method Patents and Financial Services*, Federal Reserve Bank of Atlanta Economic Review, 4th Quarter 2003, at v, v (*State Street* triggered a new "'patent flood'"); Jaffe & Lerner, at 118 (*State Street* was the "critical change").

After *State Street*, the number of business method patent applications soared by one count from 330 filed in 1995 to about 10,000 in 2001. *See* Jaffe & Lerner, at

119. Additional business method patent applications have been filed by the several thousand each year since then. *See Issues Relating to the Patenting of Tax Advice: Hearing Before the Subcomm. on Select Revenue Measures of the H. Comm. on Ways and Means*, 109th Cong. (2006) (statement of James Toupin, General Counsel, U.S. Patent and Trademark Office), *available at* http://waysandmeans.house.gov/hearings.asp?formmode=detail&hearing=492. These thousands of applications have claimed a wide variety of ideas for organizing business activities, and often include conventional use of a computer to carry out the idea or mental process. As the General Counsel of the Patent Office has explained,

> [t]oday, the computer-implemented "business method" area includes business practices in many fields such as health care management, insurance and insurance processing, reservation and booking systems, financial market analyses, point of sale systems, tax processing, inventory management, accounting and financial management.

Id. In this category, the Patent Office has issued patents for such concepts as a "[m]ethod and apparat[us] for tax efficient investment management," a "[p]rocess for creating a financial plan for ... funding of college education," a "[s]ystem for funding, analyzing and managing life insurance policies funded with annuities," and a "[s]ystem, method, and apparat[us] for providing an executive compensation system." U.S. Patent & Trademark Office, U.S. Patent Classification 705/36T, http://www.uspto.gov/patft/class705_sub36t.html (last visited Oct. 1, 2009).

Software patents have followed a similar trajectory. As one observer has noted, "[a]n essential legal principle learned by anyone who ... attended law school in the 1970s was that computer software [was] not susceptible of patent protection." James F. Bauerle, *"Beam Me Up, Scotty": Business Method Patents As A Transformational Device In Financial Services*, 119 Banking L.J. 376, 377 (2002). Like business methods generally, "the software-publishing industry grew up largely without patents." James Bessen & Michael J. Meurer, *Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovators At Risk* 22 (2008). The Federal Circuit's 1994 decision in *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994), however, "open[ed] the door to the widespread patenting of computer software." Jaffe & Lerner, at 116. After *Alappat*, which held patent-eligible a means for creating a smooth waveform display in a digital oscilloscope that would be carried out by programming a general-purpose computer, the number of software patents issued skyrocketed. *See* Robert M. Hunt, *You Can Patent That?*, Bus. Rev., 1st Quarter 2001, at 5, 6, 8. Nonetheless, even today, "the majority of software firms still do not obtain patents, and most software patents are awarded to firms in other industries." Bessen & Meurer, at 22; *see also id.* at 190.[8]

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[8] Indeed, most major software firms and inventors opposed patents for software through the mid-1990s. *See* Bessen & Meurer, at 22, 189; *see also* Effy Oz, *Acceptable Protection of Software Intellectual Property: A Survey of Software Developers and Lawyers*, 34 Info. & Mgmt. 161, 167 (1998) (reporting that 86% of surveyed software developers chose copyright over patent as their preferred avenue of protection).

As this history reveals, innovation in business and financial methods and software "flourished for decades" well before those fields became the subject of significant patenting activity. Stanford, at vi. Contrary to petitioners' claims, then, patent rights for processes that are neither transformative nor tied to a non-conventional use of an apparatus have not been essential to that innovation.[9] Thus, petitioners' warning that the future of the "modern information-based economy" (Br. 16) will be put in jeopardy unless the scope of patentable subject matter is expanded to include any application of an abstract idea is refuted by the history of successful innovations in the financial services and information technology industries that occurred without significant patenting activity.

B. Expanding Patent-Eligible Subject Matter To Include Abstract Processes That Are Neither Transformative Nor Tied To A Particular Machine In A Non-Conventional Manner Would Hinder Innovation

The principle that patenting abstract ideas is contrary to the very purpose of the Patent Act holds particular import in the financial service and information technology fields, where the rates and costs of patent litigation and the opportunities for abusive rent-seeking are uniquely high. Far from promoting innovation, expanding the scope of patent-eligible subject matter to include abstract ideas or mental processes like petitioners' method for hedging against the weather will aggravate these costs and pose a significant drag on innovation.

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[9] Innovators in business and finance historically have developed new strategies and methods largely "as a result of incentives other than patent rights." Stanford, at vi. Similarly, without patents, the software field "'produced innovations such as Windows, virtual reality, spreadsheets and networks,'" and "'because of the absence of patents, programmers could develop software using these innovations.'" Seth Shulman, *Software Patents Tangle the Web*, Tech. Rev., Mar./Apr. 2000, at 68, 71.

Although the relationship between patents and innovation is complex in all industries, when dealing with patents on ideas or methods for conducting business—including those implemented through conventional use of a computer—"there is grave doubt whether the patent system is encouraging or retarding innovation." Jaffe & Lerner, at 76. For example, one analyst has documented a unique divorce between innovation and patenting for financial services companies compared to other industries and found that differences in financial patenting are not necessarily driven by variations in fundamental innovativeness. Josh Lerner, *The New New Financial Thing: The Origins of Financial Innovations*, 79 J. Fin. Econ. 223, 248 (2006); *see also id.* at 224 ("Several considerations ... suggest that the dynamics of financial innovation are quite different from those in manufacturing."). Others have concluded, as an empirical matter, that the effects of patents on innovation are particularly likely to be negative for patents on business and financial methods. *See* Hall, at 17-18 (benefits of the patent system are less likely to outweigh costs for business- and financial-method patents than for other fields); *see also* Bessen & Meurer, at 92-93, 120-121.

More specifically, the high costs of litigation that have accompanied the increase in business method and software patents in recent years divert resources away from innovation, and would only increase under petitioners' view that *any* practical application of abstract ideas may be patented. Since *Alappat*, *State Street*, and related cases expanded the universe of patentable subject matter, the rate of applications filed for patents on business methods and related software has skyrocketed. *See* Jaffe & Lerner, at 10, 119. This dramatic increase, in turn, has brought about a spike in expensive litigation. *See* Bessen & Meurer, at 121-122, 123-124, 127. One study found that financial patents are 27 times more likely to be litigated than other patents. *Id.* at 152; *see also* Hall, at 13 (noting studies showing a lawsuit rate of 30% for financial patents compared to a 1-2% rate for all patents overall). Another noted that "[s]oftware patents are more than twice as likely to be litigated as other patents," while "patents on methods of doing business, which are largely software patents, are nearly *seven* times more likely to be litigated." Bessen & Meurer, at 22. Business method and software patents also have the highest growth rate in litigation compared to other industries. *See id.* at 156-157.

This litigation has resulted in massive costs for companies in the financial services and information technology industries. As one study found, litigation costs for business method and software patents reached the billions of dollars and substantially exceeded profits from those patents between 1996 and 1999. *See* Bessen & Meurer, at 142-144. By the late 1990s, these net effects and the high risk of litigation "likely provided a net *dis*incentive for innovation for the firms who fund the lion's share of industrial [research and development]." *Id.* at 144; *see also id.* at 145.

In addition to litigation costs, the liberal granting of patents since the late 1990s for mental processes and software for implementing those processes has enabled significant opportunistic behavior by individuals or entities who use patents primarily as a tool for extracting licensing fees. Studies of lawsuits involving business and software patents held by small entities have suggested that "the primary role played by them is the collecting of royalties from other firms." Hall, at 13. Such behavior, in turn, has resulted in a surge in patent applications not only from these rent-seekers themselves, but also from companies forced to seek patents defensively. The current environment as a result of *State Street*, *Alappat*, and subsequent developments has been described as "[a]n intellectual property arms race," in which financial services and technology firms have been forced to seek defensive patents to protect themselves from litigation "brought by individuals or small companies whose primary business is holding patents." Julie Creswell, *A Wall Street Rush To Patent Profit-Making Methods*, N.Y. Times, Aug. 11, 2006, at C7; *see also* Hunt, at 12 (describing software "patent arms race"). The Patent Office, in turn, has become overwhelmed by a flood of applications claiming financial products and software. Creswell, at C7. This experience only confirms the wisdom of this Court's warning, made over 125 years ago, that

> indiscriminate creation of exclusive privileges tends rather to obstruct than to stimulate invention. It creates a class of speculative schemers who make it their business to watch the advancing wave of improvement, and gather its foam in the form of patented monopolies, which enable them to lay a heavy tax upon the industry of the country, without contributing anything to the real advancement of the arts. It embarrasses the honest pursuit of business with fears and apprehensions of concealed liens and unknown liabilities to lawsuits

> and vexatious accountings for profits made in good faith.

Atlantic Works v. *Brady*, 107 U.S. 192, 200 (1883).

Petitioners casually suggest (Br. 37, 41) that these costs and harmful consequences may be prevented through enforcement of other limits on patentability, such as the requirements of novelty and non-obviousness. But besides rendering Section 101 a near-nullity, that approach ignores that the abstract nature of the patents at issue makes those other limits harder to enforce. For example, the abstract nature of most business method and software patents makes the scope of those patents difficult to determine and prior art harder to find or to apply. *See* Bessen & Meurer, at 201-203. Because they were rarely patented until recently, the bulk of prior art in the business method and software fields is found not in prior patents, but in "scientific articles, ... conference papers, business and other non-technical journals, users' manuals, and computer programs." Jaffe & Lerner, at 145; *see also* Hall, at 18 (citing "widespread agreement among legal scholars that ... lack of prior art databases have led to many invalid patents issuing in software and business methods"). The difficulty of searching prior art, likewise, results in poorer patent quality and increased litigation.

More fundamentally, it is precisely because business method and software patents are so likely to embody abstract ideas that litigation and other costs are so high. *See* Bessen & Meurer, at 22, 187, 200-203; *see also id.* at 194-200 (describing examples of abstract, heavily litigated business method and software patents). Among other things, the boundaries of patents claiming mere abstract ideas are particularly difficult to define and therefore provide poor notice of the patent holder's property rights. *See id.* at 147, 152. Such claims, moreover, tend to cover unintended or evolving subject matter, which both reduces incentives for future innovation by capturing the innovations of future inventors, *see id.* at 199, and makes them particularly prone to strategic extension of vague language beyond the originally intended scope, *see id.* at 200. Other provisions of the statute cannot be relied on to cure the harms to innovation that are inherent in a patent on an abstract idea or method of organizing human activity.

Moreover, even if other statutory limits on patentability could preclude the ultimate enforceability of patents with these problematic features, litigating those issues often takes years and consumes substantial resources. *See, e.g.*, Hall, at 13 ("[E]ven weak patents whose validity is uncertain can be surprisingly effective in litigation."). The absence of clear boundaries associated with most business method and software patents—combined with their sheer proliferation—creates both high risk that future business activity will inadvertently infringe on existing patents claiming abstract concepts and significant uncertainty as to the likely outcome of litigation. *See* Bessen & Meurer, at 200. For example, one study estimated that a company entering the online commerce market in 2003 would have been confronted with an estimated 4,319 patents that might apply to its services; if that same company also planned to advertise, receive payments, or arrange shipments online, an estimated 11,000 patents could have been implicated. *See id.* at 213. Ensuring in advance that a new product or service will not infringe existing patents in such an environment may be so prohibitively expensive that companies will invest only when they are willing (and able) to risk inadvertent infringement and costly and uncertain litigation.

This experience confirms the wisdom of settled precedent, under which these kinds of business methods and software are not patent-eligible. Expanding the interpretation of "process" in Section 101, as petitioners urge the Court to do, would only serve to aggravate these drags on innovation and would thus contravene the core purpose of the Patent Act.

CONCLUSION

For the foregoing reasons, this Court should affirm the judgment of the court of appeals.

Respectfully submitted.

WILLIAM F. LEE
DONALD R. STEINBERG
WILMER CUTLER PICKERING
HALE AND DORR LLP
60 State Street
Boston, MA 02109
(617) 526-6000

SETH P. WAXMAN
Counsel of Record
RANDOLPH D. MOSS
CATHERINE M.A. CARROLL
ANNIE L. OWENS
WILMER CUTLER PICKERING
HALE AND DORR LLP
1875 Pennsylvania Ave., N.W.
Washington, D.C. 20006
(202) 663-6000

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In The Supreme Court of The United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR, PATENT AND TRADEMARK OFFICE,
Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF *AMICI CURIAE* BIOTECHNOLOGY INDUSTRY ORGANIZATION, ADVANCED MEDICAL TECHNOLOGY ASSOCIATION, WISCONSIN ALUMNI RESEARCH FOUNDATION & THE REGENTS OF THE UNIVERSITY OF CALIFORNIA IN SUPPORT OF NEITHER PARTY

THOMAS DILENGE
GENERAL COUNSEL
HANSJORG SAUER, PH.D.
DEPUTY GENERAL COUNSEL
BIOTECHNOLOGY INDUSTRY ORGANIZATION
1201 MARYLAND AVE., S.W.
SUITE 900
WASHINGTON, DC 20024
(202) 962-6695

E. ANTHONY FIGG
Counsel of Record
NANCY J. LINCK, PH.D.
MINAKSI BHATT
MARTHA CASSIDY, PH.D.
1425 K St., N.W.
SUITE 800
WASHINGTON, DC 20005
(202) 783-6040

(Additional Counsel listed on inside cover)

BOTH 4X95UU

CHRISTOPHER L. WHITE
GENERAL COUNSEL
ADVANCED MEDICAL TECHNOLOGY
ASSOCIATION
701 PENNSYLVANIA AVE., N.W.
SUITE 800
WASHINGTON, DC 20004
(202) 783-8700

HOWARD W. BREMER
EMERITUS PATENT COUNSEL
WISCONSIN ALUMNI RESEARCH
FOUNDATION
614 WALNUT ST.
13TH FLOOR
MADISON, WI 53726
(608) 263-2500

P. MARTIN SIMPSON, JR.
MANAGING COUNSEL
BUSINESS TRANSACTIONS & LAND USE
OFFICE OF GENERAL COUNSEL
THE REGENTS OF THE
UNIVERSITY OF CALIFORNIA
1111 FRANKLIN ST.
12TH FLOOR
OAKLAND, CA 94607
(510) 987-9800

Counsel for Amici Curiae
Biotechnology Industry Organization,
Advanced Medical Technology Association,
Wisconsin Alumni Research Foundation &
The Regents of the University of California

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INTERESTS OF *AMICI CURIAE*

The Biotechnology Industry Organization ("BIO"), the Advanced Medical Technology Association ("AdvaMed"), the Wisconsin Alumni Research Foundation ("WARF"), and The Regents of the University of California ("University of California") (collectively "*Amici*") respectfully submit this brief.[1]

BIO is the country's largest biotechnology trade association, representing over 1200 companies, academic institutions, and biotechnology centers in all 50 States. BIO members are involved in the research and development of biotechnological healthcare, agricultural, environmental and industrial products. BIO member companies range from startup businesses and university spin-offs to large Fortune 500 corporations. The vast majority are small companies that have yet to bring products to market and attain profitability.

Previously unknown biological correlations -- "natural laws or principles" discovered through molecular biology techniques -- are increasingly used to guide biotechnological product development. BIO members invest heavily in the discovery and application of such correlations and depend on the patent system to recoup vast development expenses incurred during the decade-long product development based on these correlations.

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[1] Pursuant to Supreme Court Rule 37.3(a), all parties have filed with the Court general written consents to the filing of *amicus* briefs. Pursuant to Rule 37.6, *amici curiae* state that no person or entity, other than BIO, AdvaMed, WARF, or University of California or members of these entities, has made any monetary contribution to the preparation or submission of this brief. Further, no counsel for Petitioner or Respondent authored this brief in whole or in part.

AdvaMed is the largest medical technology association in the world, representing more than 1,600 medical device, diagnostic, and health information system manufacturers and subsidiaries. AdvaMed's members manufacture 90 percent of the $75 billion of health care technology purchased annually in the United States and more than 50 percent of the $175 billion purchased around the world annually. AdvaMed member companies rely upon patent protection to support the development of new technologies, including orthopedic implants, heart valves, cardiovascular stents, and devices for diagnosing life threatening diseases. Medical devices often have short product life cycles, sometimes measured in months, due to rapid innovation derived from clinician input to improve functionality, efficacy and safety. This requires recouping investments quickly, heightening the necessity for a predictable patent system.

The University of California and WARF, the designee of the University of Wisconsin-Madison for its technology management, engage in and support scientific research, obtain patents on inventions arising from such research, license technologies to the private sector for commercialization and utilize licensing income to underwrite further academic research or for educational purposes.

The University of California and WARF are representatives of a larger academic sector that drives innovation and research in the United States and provides clinical services utilizing the results of research. Moreover, the academic sector is credited as being the birthplace of the biotechnology industry. In 2006 U.S. academic institutions spent $48 billion on research and development (R&D). The federal government provided 63% for academic R&D expenditures in that year, with the institutions themselves contributing 19%. The life sciences field received the largest share of investment in academic R&D, accounting for about 60% of all expenditures and also of federal expenditures. NSF National Science Board, *Science and Engineering Indicators 2008*, vols. 1 & 2 (2008), http://www.nsf.gov/statistics/seind08.

In general, the non-profit research community carries out much of its R&D under the Bayh-Dole Act and its implementing regulations. As a stated policy and objective, the regulations have the use of the patent system to promote utilization of inventions arising from federally-supported research or development. 35 U.S.C. §§ 200-212; 37 C.F.R. § 401. Hence, the patent system is vital to transferring research results to the public. Technology transfer by universities and non-profit research institutions depends almost entirely on the underlying patent position for further investment and commercialization that it provides to partners and licensees. Given that most university-generated inventions are embryonic in nature and require significant effort and investment to develop a product, any uncertainty that accompanies a patent and its scope and validity increases the likelihood that the technology will not be developed and decreases the chances that the public will benefit from the taxpayer's investment in the research that led to the patented technology.

In re Bilski, 545 F.3d 943 (Fed. Cir. 2008) raises that uncertainty, because it bears upon and casts doubt on the protection of certain inventions and particularly inventions defined by method claims in the biotechnology arts because of its "machine-or-transformation" recitations and requirements. That uncertainty puts in jeopardy the potential benefit that the public can derive from technology transfer, through the vehicle of the patent system, of inventions that have been generated through both privately-funded and taxpayer-supported research and development.

This Court's long-standing interpretation of patent eligibility under 35 U.S.C. § 101 has enabled great progress in biotechnology and medical technology, benefitting society through improved medicines and crops and life-saving medical devices and diagnostics. Biotechnology and medical technology innovators and investors have relied on that interpretation for decades. Today, however, at the dawn of an era of personalized medicine, made possible through understanding and applying natural principles, *Amici's* members are concerned that unforeseen breakthroughs in the life sciences could be excluded from patenting under the Federal Circuit's rigid and constricted patent-eligibility test.

Amici submit this brief to assist this Court's long-standing efforts to guide the evolution of patent law in a tempered, predictable way that will accommodate emerging technologies to the benefit of all, maintain the incentive for the biotechnology and medical technology industries to continue their massive investments, and guard against negative, unforeseen consequences.

SUMMARY OF THE ARGUMENT

Biotechnology and medical technology innovation and investment are predicated on inclusive standards of patent eligibility—standards that have enabled great progress in the two fields. Because these technologies require investment in unusually high-risk, expensive research and development, only broad, well-established eligibility standards can promote its progress.

Application of *Bilski's* rigid "machine-or-transformation" test to biotechnology and medical technology process inventions is contrary to this Court's precedent and creates uncertainty regarding their patent eligibility, even for those inventions that have already been patented. The uncertainty surrounding the application of *Bilski* to these inventions will deter critical investment in the biotechnology and medical technology industries. These process inventions are not abstract ideas, laws of nature, or natural phenomena. Rather each provides a useful and tangible end, potentially bringing the industry closer to addressing serious societal issues, including those due to unsolved medical needs. Yet, undoubtedly, many of these process claims would be in jeopardy if *Bilski* is permitted to stand and the consequent uncertainty would discourage further investment and commercialization. Examples of such claims are those to processes for diagnosing or prognosing diseases and those to "biomarkers." Biomarkers play a critical role in predicting disease and facilitating drug development.

The Federal Circuit erred in holding that a process must be tied to a machine or transformation under 35 U.S.C. § 101. The governing standard regarding patent eligibility is found in § 101's unambiguous language—language that permits the patenting of "any new and useful process," if the other sections of title 35 are met. This Court has established the limits of § 101, consistently holding that those limits are broad, excluding only abstract ideas, laws of nature and natural phenomena. It has also disfavored rigid, bright-line tests, such as that imposed in *Bilski*.

Amici respectfully request this Court to (1) set aside the Federal Circuit's "machine-or-transformation" test and other restrictive tests that have confused the § 101 analysis, such as those labeled "preemption" and "post-solution activity;" and (2) reaffirm that the appropriate § 101 analysis requires reading the language of the statute broadly, only excluding claims to abstract ideas, laws of nature, and natural phenomena *per se*. In so doing, this Court will continue to foster the growth of the biotechnology and medical technology industries and encourage and enhance the transfer of technology from the university and non-profit sector in consort with the private sector and particularly small business.

ARGUMENT

Amici answer Petitioner's first question as follows:

> [T]he Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. § 101.

I. BIOTECHNOLOGY AND MEDICAL TECHNOLOGY INNOVATION AND INVESTMENT ARE PREDICATED ON INCLUSIVE PATENT-ELIGIBILITY STANDARDS

A. Inclusive Interpretation of 35 U.S.C. § 101 has Enabled Great Progress in Biotechnology and Medical Technology

The U.S. patent system has deep historic roots in the mechanical, electrical, and chemical arts. However, prior to 1980, patent-eligibility rules that had developed in the context of these technologies provided an uncertain fit for many life sciences inventions that today are considered biotechnology.

By 1980, the structure of DNA had been discovered; the first biochemical replication of a viral gene achieved; and recombinant DNA technology (gene splicing) was beginning to be applied. The nascent biotechnology industry was on the verge of achieving amazing scientific and medical breakthroughs, but significant investment was needed to fund research and development efforts and to bring biotechnology discoveries to market. That investment required the assurance of patent protection. Fortunately, this Court eliminated much uncertainty with respect to whether biotechnology inventions would be patent-eligible subject matter with its landmark decision, *Diamond v. Chakrabarty*, 447 U.S. 303 (1980).

In ruling that non-naturally occurring, genetically-engineered bacteria constitute patent-eligible subject matter under 35 U.S.C. § 101, this Court observed: In "choosing such expansive terms as 'manufacture' and 'composition of matter,' modified by the comprehensive 'any,' Congress plainly contemplated that the patent laws would be given wide scope." *Id.* at 308. The Court found this inclusive reading to be fully supported by the legislative history of the Patent Act. *Id.* at 309 (Congress intended statutory subject matter to include "anything under the sun that is made by man") (citations omitted).

Clarifying that human intervention is the touchstone of patent eligibility, this Court gave effect to an unambiguously broad reading of § 101, intended to include technologies that Congress could not have foreseen when it passed the 1952 Patent Act. *Id.* at 315. *Chakrabarty* provided a profound contribution to the growth of biotechnology in the United States and enabled our country to become an international leader in biotechnology.

Chakrabarty paved the way for biotechnology discoveries, such as recombinant human insulin, human growth hormone, tissue plasminogen activator, and alpha interferon, to begin to address previously unmet medical needs. In the healthcare sector alone, the biotechnology industry has since brought to market more than 200 new drugs and vaccines, products that have improved the lives of hundreds of millions of people worldwide. More than 400 therapeutic products are currently in clinical trials, being studied to combat more than 200 diseases, including heart disease, cancer, AIDS, Alzheimer's, Parkinson's, stroke, septic shock, diabetes, anemia, cystic fibrosis, multiple sclerosis, lupus, kidney disease and liver disease. These new therapies offer hope for patients who have no or only very limited treatment options.

Biotechnological innovation also has begun to make possible the identification of an individual's susceptibility to certain diseases, such as cancer or diabetes, through the discovery of certain genetic mutations in that individual's DNA. Other diagnostic applications include the ability to determine the type of infectious agent a particular patient is presenting by amplifying and identifying small amounts of such agent's DNA. Both of these applications will greatly enhance the treatment of individuals.

In agriculture, spurred by the expectation of U.S. patent protection, biotechnological innovation has had significant global impact, providing increased harvests, reduced pesticide and fuel use and significant economic benefit to farmers. In 2006 in the United States over 8 billion pounds of additional crops were grown with over 100 million pounds fewer pesticides providing farmers with net returns of over $2 billion. Sujatha Sankula, Quantification of the Impacts on U.S. Agriculture of Biotechnology, Nov. 2006, Nat'l Center for Food & Agric. Pol'y, http://www.ncfap.org/documents/2005biotechExecSummary.pdf. In 2008 over 12 million small and resource poor farmers in countries like China, India, the Philippines and South Africa adopted U.S.-innovated biotech crops as means to grow out of poverty. *See* Clive James, Global Status of Commercializes Biotech/GM Crops, Int'l Service for Acquisition Agri-Biotech Applications Brief 39-2008, http://www.isaaa.org/resources/publications/briefs/39/executivesummary/pdf/Brief%2039%20-%20Executive%20Summary%20-%20English.pdf.

These tremendous benefits and opportunities would not have been possible without the inclusive reading this Court gave to § 101 in 1980.

B. Biotechnology and Medical Technology Research and Development Require Unusually High-Risk Investment that, in Turn, Requires Broad, Well-Established Patent-Eligibility Standards

Achievements in biotechnology result from extensive and expensive research and development efforts. See NIH: Moving Research from the Bench to the Bedside: Hearings Before the Subcomm. on Health of the House Comm. on Energy and Commerce, 108th Cong., 1st Sess. 47 (2003) (testimony of Phylliss Gardner, M.D.) ("The biotechnology industry is the most research and development-intensive and capital-focused industry in the world."). U.S. biotechnology companies currently invest more than $30 billion annually in research and development. Virtually all of this investment is through private funding. Id. at 49 (noting that 98% of R&D investment comes from the private sector). The average capitalized cost of bringing a biologic from the laboratory to human clinical trials exceeds $600 million. Subsequent FDA-mandated human testing consumes another $624 million. Clinical development time alone consumes more than eight years. Joseph A. Di Masi and Henry G. Grabowski, The Cost of Biopharmaceutical R & D: Is Biotech Different? 28 Manage. Decis. Econ. 469-79 (2007).

AdvaMed's members spend roughly $9 billion annually on the research and development. Publicly traded diagnostics companies with marketed products invest about 35% of their revenue into R&D, and those with annual sales under $5 million may invest 200% or more of their revenue into R&D. The Lewin Group, Inc., *The Value of Diagnostics* 3 (2005). From 1989 to 2004 alone, the number of laboratory tests available to more accurately and promptly diagnose disease increased by approximately 60%. Frank R. Lichtenberg, *Better Information, Better Health, 1990-2003* (2006), http://www.inhealth.org/doc/Page.asp?PageID=DOC 000069. Innovations in diagnostic testing just between 1990 and 1998 may have increased life expectancy as a much as one-half year. Frank R.

Lichtenberg, *The Impact of New Laboratory Procedures and Other Medical Innovations on the Health of Americans, 1990-2003* (Nat'l Bureau Econ. Res. Working Paper No. W12120), http://www.nber.org/papers/w12120.

Investing in biotechnology is also very risky: For every successful pharmaceutical product, thousands of candidates are studied and rejected after large investments have been made. Only a small minority of drugs that advance to human clinical trials obtain FDA approval. *See* Tommy G. Thompson, 19th U.S. Secretary of Health and Human Services, *Remarks at the Milken Institute's Global Conference* (Apr. 26, 2004), http://www.hhs.gov/news/speech/2004/040426.html (noting that only approximately one in 5,000 biopharmaceutical products will achieve FDA approval). The FDA estimates that just a 10% improvement in the ability to predict drug failures before clinical trials could save $100 million in development costs per drug. Biomarkers: An Indispensable Addition to the Drug Development Toolkit, White Paper – A PHARMA Matters Report (Mar.2009),http://thomsonreuters.com/content/PDF/scientific/pharma/biomarkers2.pdf (hereafter "PHARMA Matters"). Thus, raising funds to support product research and development requires the expectation of reasonable financial returns from commercial products and services that are successful. That expectation rests on the understanding that novel, useful, and unobvious biotechnological innovations will be patent eligible under the principles established in *Chakrabarty*.

A dramatic example of how even perceived changes to patentability standards can impact biotechnology investment occurred on March 14, 2000, when President Clinton and British Prime Minister Blair issued a joint statement that was interpreted to foreshadow impending limitations on human gene patents. Biotechnology stocks fell sharply. At close of trading, the NASDAQ biotech index had fallen 13%, significantly lowering biotech market capitalization and dropping the NASDAQ over 200 points. Tom Reynolds, *Genome Data Announcement Fuels Stock Plunge, Misunderstanding*, 92 J. Nat. Cancer Inst. 594 (2000). Like the growth of biotechnology after *Chakrabarty*, this example illustrates that patent-eligibility standards directly impact biotechnology investment incentives. If those standards were constricted, uncertainty about the availability of patent rights would deter the high-risk investments that are essential to biotechnology.

II. APPLICATION OF *BILSKI* TO BIOTECHNOLOGY AND MEDICAL TECHNOLOGY INVENTIONS IS CONTRARY TO PRECEDENT AND CREATES UNCERTAINTY REGARDING ISSUED PROCESS PATENT CLAIMS

A. The *Bilski* Test Is Not Appropriate for Determining Patent Eligibility of Biotech-nology and Medical Technology Inventions Under § 101

In *Bilski,* the Federal Circuit did not confine its rigid "machine-or-transformation" test to business method patents, or even to patents in the computer arts. It appears to apply to all patents and, in fact, has been applied to patents in the biotechnological and pharmaceutical arts. *See Classen Immunotherapies, Inc. v. Biogen Idec,* Nos. 06-1634, 06-1649, 2008 WL 5273107, at *1 (Fed. Cir. Dec. 19, 2008) (summarily affirming a district court summary judgment that a biotechnology process claim was not patent eligible because it did not meet the *Bilski* test); *King Pharms. v. Eon Labs.*, 593 F. Supp. 2d 501, 512-13 (E.D.N.Y. 2009) (holding one pharmaceutical process claim did not meet the *Bilski* test).

This Court has addressed the patent eligibility of biotechnology inventions under § 101 on several occasions. *See, e.g., J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124 (2001); *Chakrabarty*, 447 U.S. 303; *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127 (1948). In each of these cases, this Court asked whether the claimed invention was merely the discovery of a law of nature (or natural phenomenon) or did it result "from the application of the law of nature to a new and useful end." *Funk Bros.*, 333 U.S. at 131-32. *Accord J.E.M. Ag Supply*, 534 U.S. at 145-46; *Chakrabarty*, 447 U.S. at 303, 310. While these cases involved claims to products rather than processes, "the same principle applies" when analyzing process claims for patent eligibility. *Diamond v. Diehr*, 450 U.S. 175, 188 n.11 (1981). This Court has never applied the Federal Circuit's machine-or-transformation test in a biotechnology case. The havoc such an application would cause is explained below.

B. The Federal Circuit's *Bilski* Test Would Create New Uncertainty and Stifle Biotechnology and Medical Technology Innovation

Requiring biotechnology and medical technology process claims to be coupled to a physical transformation of matter or tied to a specific machine will exclude from patent eligibility inventions directed to new and useful methods which are of great value to society – inventions that also are specific and concrete (are not abstract ideas), that result from human intervention (are not natural phenomena) and that are applications yielding a new and useful end (are not laws of nature).

1. Biotechnology and medical technology processes are not abstract ideas, laws of nature or natural phenomena

Consider the following claims to hypothetical inventions:

> 1. A method of diagnosing Disease X in a patient in need thereof, which comprises detecting elevated Protein Y levels in a body fluid sample from said patient.
>
> 2. A method of determining whether a malignant tumor in a patient in need thereof is susceptible to Anti-Cancer Drug X, which comprises measuring the level of expression of Gene Y in said malignant tumor compared to a control non-malignant tissue from said patient, wherein expression levels of Gene Y in said malignant tumor greater than twice that of said control non-malignant tissue correlate with susceptibility of said tumor to Anti-Cancer Drug X.

Neither claim is tied to a particular machine or results in transformation of an "article." Yet claim 1 is not directed to an abstract idea or law of nature; it is a method of diagnosing disease with specific and concrete steps, yielding a useful and tangible end (a method of diagnosing Disease X). Likewise, claim 2 is not directed to the "idea" that susceptibility of a tumor to Cancer Drug X is related to Gene Y expression; it is directed to a method for determining whether Cancer Drug X therapy would be useful against a particular tumor.

Consider also the following hypothetical example concerning physiologic monitors: Hemodynamic monitors measure naturally-occurring parameters of a patient's blood stream. For example, changes in blood oxygenation can be monitored to detect a sepsis infection. Some of these parameters are themselves novel, or can be measured or communicated in novel ways, to facilitate a surgeon's treatment and diagnosis of disease. These are inventions that save lives on a daily basis. Such novel systems to determine hemodynamic parameters are usually best claimed as processes, for example:

> 1. A process for determining blood oxygenation including: determining a blood pressure pulse wave; deriving a blood oxygenation parameter from the pulse wave using equation X; and communicating the blood oxygenation parameter to medical personnel.

Despite the life-saving potential of such inventions, there could be difficulties with obtaining or enforcing such process claims under *Bilski*, even in kit format.

Determining where a "natural phenomenon" leaves off and becomes "touched by the hand of man" under *Chakrabarty* may be difficult in practice to determine. However, where such a "touch" can be recognized, the invention is not an abstract idea, law of nature, or natural phenomenon *per se* and should not be excluded from patent eligibility.

For algorithm improvements, it may be impossible to find a linking "machine" that isn't conventional or easy to design around. For example, the hardware might be a conventional monitor, pressure sensor and catheter that are not a "particular machine" under *Bilski*. Instead, the novelty may be in the way the information is processed, such as by an improved, empirical (manmade) mathematical algorithm (e.g., equation X above) and application of that innovation to a useful end. Recitation of a generalized computer system executing equation X, however, might not satisfy *Bilski's* "particular machine" requirement. On the other hand, introducing sufficient limitations to make the monitor a "particular machine" runs a high risk of a design-around since distributed computing allows an infinite number of ways to shift data and process duties between physically disparate hardware and software.

Meeting the *Bilski* "transformation" test is also difficult because the monitor itself does not perform a treatment or diagnosis. The monitor is determining and communicating a natural parameter with a novel – but abstract – equation. The treatment or diagnosis step could be added to the claim, which would likely satisfy *Bilski*. In this instance, however, the infringer selling the monitor would not be directly infringing the patent. Instead, the medical personnel performing the treatment or diagnosis would have to be joined in the suit as a joint tortfeasor. This result would upend Congress' intent under 35 U.S.C. § 287(c), which spares medical personnel liability from patent infringement suits on medical methods.

Numerous process (or "method") claims directed to biotechnological inventions that arguably do not yield a physical transformation or require machine implementation have been issued by the U.S. Patent and Trademark Office ("USPTO"). *See, e.g.,* U.S. Patent No. 6,410,516 (method of modifying effects of external influences on a eukaryotic cell to induce intracellular signaling); U.S. Patent No. 6,869,762 (method of predicting susceptibility to Crohn's disease). These issued claims are presumed valid and therefore directed to patent-eligible subject matter. 35 U.S.C. § 282. Some of these claims depend on the discovery of a biological phenomenon which allows the method to work, and some have a "calculation" or "mental" step. Nevertheless, none claims an abstract idea, law of nature or natural phenomenon *per se.* Instead each provides a valuable and concrete contribution to the useful arts and is exactly the kind of subject matter that the patent system was designed to protect. Limiting process claims to those which can pass the rigid *Bilski* test would unnecessarily limit protection for innovations in unexpected and highly deleterious ways.

2. Biomarkers are useful to predict disease and form the bases for their treatment

Over the past decade scientists increasingly have been able to use the growing knowledge of the biology of disease to address conditions that once were impossible to diagnose, predict, or treat. *See generally* PHARMA Matters, *supra* at p. 13. Newly discovered natural phenomena, such as genetic or physiological abnormalities that correlate with the likelihood of developing a disease or being susceptible to a treatment, have become known as "biomarkers," which today form an important component of almost every major clinical trial. A biomarker is "a characteristic that is objectively measured and evaluated as an indicator of normal biological processes, pathogenic processes or pharmacological responses to a therapeutic intervention." *Biomarkers and Surrogate Endpoints,* 69 Clinical Pharmacology & Therapeutics 89, 91 (2001). A biomarker's usefulness is based on its correlation to the status of a disease or organism, performed through mental operations or otherwise. For example, in the late 1980s, scientists discovered that HIV viral load could be used to predict the impending onset and progression of AIDS, allowing physicians to monitor the status of their patients, and patients to make personal decisions based on how long they could expect to remain symptom-free. Researchers sought and obtained patents for methods in the growing diagnostic and therapeutic arsenal against HIV, including, for example, U.S. Patent No. 5,674,680, owned by the Rockefeller University:

> 1. A method for predicting the time of onset of the development of clinical signs of immunodeficiency associated with disease progression in an

individual infected with human immunodeficiency virus (HIV) comprising:

(a) determining a level of expression of HIV messenger RNA (mRNA) in peripheral blood cells obtained from the individual; and

(b) correlating the level of expression of HIV messenger RNA with the time of onset of the development of clinical signs of immunodeficiency; wherein

  (i) a high level of HIV mRNA correlates with a high likelihood for the development of clinical signs of immunodeficiency within about two years; and

  (ii) a low level of HIV mRNA or no detectable HIV mRNA correlates with a low likelihood of the development of clinical signs of immunodeficiency for at least five years.

Based on such technology, viral load subsequently was used to show that HIV-positive individuals receiving combination therapy had a higher reduction in viral load than those on monotherapy, and that combination therapy was therefore more effective in slowing the onset and progression of the disease. The viral load biomarker was used to develop and assess the Highly Active Antiretroviral Therapy treatment (drug cocktail) regimens used by many people living with HIV today. Charles Flexner, *HIV Drug Development*, 6 Nature Reviews Drug Discovery 959 (2007).

The drug irinotecan (Camptosar®) is an example of the use of a biomarker in "personalized medicine" to guide both clinical practice and subsequent clinical trials. Irinotecan is used to treat advanced colorectal cancer. Once administered, irinotecan is converted to an active metabolite, and then eventually inactivated by an enzyme, UGT1A1. About 10% of the population have reduced UGT1A1 enzyme activity because of a genetic variation in the enzyme. These patients inactivate the drug more slowly and therefore are exposed to overly high drug concentrations when administered a conventional dose and consequently may experience life-threatening side effects such as neutropenia (a decrease in white blood cells) and diarrhea. The toxicity of irinotecan had long been a concern. However, once researchers discovered the link between the UGT1A1 enzyme and irinotecan toxicity, clinicians were able to identify those patients who needed to be given a reduced amount of irinotecan. Based on this discovery, the U.S. Food and Drug Administration added a warning to irinotecan's labeling in 2005. This biomarker technology is an important clinical and commercial invention for which patent protection has been obtained. U.S. Patent No. 6,395,481. Claim 21 reads:

> 21. A method for screening individuals for variation in glucuronidation activity comprising detecting polymorphisms in a uridine diphosphate glucuronosyltransferase I (UGT1A1) gene promoter, the method comprising determining the presence of five (TA) repeats in said promoter, wherein the presence of five TA repeats correlates with increased expression of the UGT gene.

This pharmacogenomic technology also has led to improvements in other drug development. Almost immediately, it prompted use of the UGT1A1 biomarker to guide other ongoing studies, including several new irinotecan and oxaliplatin-based chemotherapies.

A well-known story in the history of biomarker drug development involves the *her-2* gene and receptor, discovered in the early 1980s. Scientists found that 20–30% of breast cancer patients have an overabundance of the HER-2 receptor on their cancer cells ("HER-2 overexpressers"). This biomarker's presence correlates with an aggressive form of breast cancer, and therefore a poor prognosis. Discovery of this correlation allowed testing for this biomarker to become an important diagnostic tool that guided decisions for using then-existing treatments such as aggressive surgery or chemotherapy. The University of California obtained several patents protecting this important technology, including now-expired U.S. Patent No. 4,968,603. Claim 1 reads:

> 1. A method for screening patients to determine disease status, said method comprising:
>
> measuring the level of amplification or expression of the HER-2/neu gene in a sample from a patient suffering from breast or ovarian adenocarcinoma; and
>
> classifying those patients having an increased level of amplification or expression of the HER-2/neu gene relative to a reference level characteristic of normal cells as being more likely to suffer disease relapse or having a decreased chance of survival.

The HER-2 biomarker also provided scientists with a new target for an entirely novel therapy. In 1997, many years after the HER-*2/neu* gene discovery, the FDA approved the antibody trastuzumab (Herceptin®), a new therapy that specifically targets HER-2 receptors in HER-2 overexpressers. This therapy successfully reduces the spread and progression of cancer in many patients who had very few treatment options prior to this important discovery. Currently, HER-2*/neu* testing is required to determine whether a breast cancer patient can receive Herceptin therapy.

3. Biomarkers play a critical role in drug research and require significant investment for their discovery

Today, biomarkers play a critical role in drug research, providing the potential for "safer drugs, in greater numbers, approved more quickly." Federico Goodsaid and Felix Frueh, *Biomarker Qualification Pilot Process at the FDA*, 9 A.A.P.S. Journal 1, art. 10, E105 (2007). Biomarkers are an important element in the FDA's efforts to speed development and approval of new drugs and biologics. *See* Dept. of Health and Human Services, U.S. Food and Drug Admin., The Critical Path Initiative: Projects Receiving Critical Path Support in Fiscal Year 2008 (Apr. 2009), http://www.fda.gov/ScienceResearch/SpecialTopics/CriticalPathInitiative. They also are the object of major research efforts by the National Institutes of Health (Biomarker Consortium), universities, and the private sector. *See* Gregory J. Downing, *Partnerships in Biomarker Research*, Biomarkers in Clinical Drug Development 247-270 (John C. Bloom & Robert A. Dean eds., Informa Health Care, 2003); *see also, e.g.*, Nat'l Inst. Health, Biomarker Consortium, http://www.biomarkersconsortium.org; Pharmaceutical Research and Manufacturers of America Biomarker Consortium, http://www.innovation.org. *Amici* invest heavily in the discovery of new natural correlations, believing that the fruits of this research can be applied in future clinical practice.

Investment in such studies has been rewarded. For example, retrospective analysis of several colorectal cancer drug trials showed that one reason why some patients did not respond to certain antibody therapy was because of a mutation of the *k-ras* gene. This finding now allows physicians to tailor such therapy to the genetic status of individual patients and to identify patients who are likely to respond to these biologic drugs. Patients who formerly would have undergone needless, ineffective treatment now can be redirected immediately to alternative therapies. The discovery of the importance of the *k-ras* gene has significantly impacted the clinical management of metastatic colorectal cancer, resulting in changes to clinical practice guidelines as well as labeling changes for the EGFr antibody biologic drugs cetuximab and panitumumab. Center for Drug Evaluation and Research, U.S. FDA, *Class Labeling Changes to anti-EGFR Monoclonal Antibodies, Cetuximab (Erbitux) and Panitumumab (Vectibix):* KRAS *Mutations*, http://www.fda.gov/AboutFDA/CentersOffices/CDER/ucm172905.htm; Carmen, J. Allegra et al., *American Society of Clinical Oncology Provisional Clinical Opinion*, 27 J. Clinical Oncology 2091 (2009).

Biomarkers also are used to guide clinical trials of leading-edge treatments. For example, in preliminary clinical studies of the MAGE-A3 antigen-specific cancer immunotherapeutic (MAGE-3 ASCI), a member of a new class of biologic cancer therapeutics, scientists found one can predict the likelihood of a positive treatment response or the risk of relapse in individual lung cancer patients by identifying specific genetic signatures. This finding guided the design of the largest lung cancer clinical trial ever conducted, which currently is underway and forms the basis for major ongoing commercial drug and diagnostic development efforts by BIO members. *Abbott and GSK to Collaborate on Molecular Diagnostic Test to Select Candidate Patients for Future Cancer Immunotherapy*, N.Y. Times, July 13, 2009.

Innovations in the fields of biomarkers and medical devices show great promise of revolutionizing medicine in the coming decades, allowing for personalized medicine and a higher standard of patient care. The *Bilski* "machine-or-transformation" test would stifle investment and innovation in these fields, and is not an appropriate standard for determining patent eligibility under § 101.

III. *BILSKI* IS INCONSISTENT WITH THE BROAD STANDARD FOR PATENT ELIGIBILITY IN § 101 AND THIS COURT'S PRECEDENT

Section 101 defines patent-eligible subject matter as "*any* new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof . . ." (emphasis added). By crafting this statute using clear, broad language to include "any" new and useful process, machine or material rather than naming discrete fields of invention, Congress sought to promote the progress of all areas of science and technology, recognizing that the most important inventions are often unforeseeable. *See Chakrabarty*, 447 U.S. at 316. Especially in emerging fields such as biotechnology and medical technology, neither Congress nor this Court can predict those inventions "most benefiting mankind" and destined to "push back the frontiers." *Id.* For instance, when the 1952 Patent Act was passed, no one could have predicted advances such as individualized medicine using biomarkers, genetic testing for diseases or genetically-engineered organisms. Yet under the plain language of § 101, inventions in each of these fields can be protected. The Federal Circuit's rigid, bright-line *Bilski* test is inconsistent with the clear language of § 101, and this Court's precedent.

A. The Governing Standard Regarding Patent Eligibility of Process Claims is 35 U.S.C. § 101 and this Court's Precedent

"In cases of statutory construction, we begin with the language of the statute." *Diehr*, 450 U.S. at 181-82. Here, that language reflects the inclusive nature of § 101: "Whoever invents or discovers any new and useful process . . . may obtain a patent therefor, subject to the conditions and requirements of this title." The statute "does not mean 'some,' or even 'most,' but all." *Bilski*, 545 F.3d at 1012 (Rader, J., dissenting). As this Court has stated:

> Unless otherwise defined, "words will be interpreted as taking their ordinary, contemporary, common meaning," and, in dealing with the patent laws, we have more than once cautioned that

> "courts *should not read into the patent laws limitations and conditions which the legislature has not expressed*."

Diehr, 450 U.S. at 182 (citations omitted). *See also* H.T. Markey, *"Why Not The Statute?,"* 65 J. Pat. Off. Soc'y 331, 331-40 (1983).

Of course, there are "limits to § 101 and every discovery is not embraced within the statutory terms. Excluded from such patent protection are laws of nature, natural phenomena, and abstract ideas." *Diehr*, 450 U.S. at 185. Thus,

> a new mineral discovered in the earth or a new plant found in the wild is not patentable subject matter. Likewise Einstein could not patent his celebrated law that $E=mc^2$; nor could Newton have patented the law of gravity. Such discoveries are "manifestations of . . . nature, free to all men and reserved exclusively to none."

Chakrabarty, 447 U.S. at 309, *quoted in Diehr*, 450 U.S. at 185.

> The abstractness and natural law preclusions not only make sense, they explain the purpose of the expansive language of section 101. Natural laws and phenomena can never qualify for patent protection because they cannot be invented at all. . . . Furthermore, abstract ideas can never qualify for patent protection because the Act intends, as section 101 explains, to

> provide "useful" technology. An abstract idea must be applied to (transformed into) a practical use before it qualifies for protection.

Bilski, 545 F.3d at 1013 (Rader, J., dissenting).

Aside from the three narrow exclusions, subject matter within the statutory categories identified in § 101 is patent eligible. Thus, an application of a law of nature, natural phenomenon or abstract idea can be patented as part of a process. *See Diehr*, 450 U.S. at 187. In fact, "all inventions can be reduced to underlying principles of nature." *Id.* at 189 n.12; *see also Lab. Corp. of Am. Holdings v. Metabolite Labs.*, 548 U.S. 124, 134-36 (2006) (Breyer, J., dissenting from dismissal of writ of certiorari as improvidently granted) ("many a patentable invention rests upon its inventor's knowledge of natural phenomena; many 'process' patents seek to make abstract intellectual concepts workably concrete; and all conscious human action involves a mental process").

Admittedly, the "line between a patentable 'process' and an unpatentable 'principle' is not always clear. Both are conception[s] of the mind, seen only by [their] effects when being executed or performed." *Parker v. Flook*, 437 U.S. 584, 589 (1978) (quoting *Tilghman v. Proctor*, 102 U.S. 707, 728 (1881)) (alternations in original). Nevertheless, difficulty in applying the statute does not justify or require adoption of a bright line test:

> The subject-matter provisions of the patent law have been cast in broad terms to fulfill the constitutional and

> statutory goal of promoting "the Progress of Science and the useful Arts" with all that means for the social and economic benefits envisioned by Jefferson. Broad general language is not necessarily ambiguous when congressional objectives require broad terms.

Chakrabarty, 447 U.S. at 315.

B. The Federal Circuit Erred by Holding that a "Process" must be Tied to a Machine or Transformation" Under 35 U.S.C. § 101

A patent-eligible process has not in the past and should not now require physical transformation or machine implementation. The Federal Circuit's machine-or-transformation test requires ignoring this Court's rejection of such a rigid test in favor of a broader, more reasoned approach. *See, e.g., Gottschalk v. Benson*, 409 U.S. 63, 67 (1972); *Flook*, 437 U.S. at 590; *Diehr*, 450 U.S. at 185 (each identifying a patent-eligible process as "any new and useful process," except those to abstract ideas, natural phenomena and laws of nature).

1. The Federal Circuit has misinterpreted Supreme Court precedent

The Federal Circuit attributes its machine-or-transformation test to this Court. *Bilski*, 545 F.3d at 963 (referring to "the Court's machine-or-transformation test"); *id.* at 964 (stating that the "Supreme Court has enunciated a definitive test," i.e., the machine-or-transformation test). Yet this Court clearly has rejected such a test. *See, e.g., Flook*, 437 U.S. at 589 n.9 ("As in *Benson*, we assume that a valid process patent may issue *even if it does not meet* one of these qualifications [transformation or machine-implementation] of our earlier precedents.") (emphasis added) (internal citations omitted); *Benson*, 409 U.S. at 71 ("It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing.' We *do not hold* . . . . ") (emphasis added). Thus, this Court has never held that the absence of a physical transformation or machine implementation is sufficient to declare a process *ineligible* for patent protection.

In invoking its *Bilski* test, the Federal Circuit has transformed what amounts to a "safe harbor" in certain circumstances into a rigid exclusionary test: According to this Court, a process that results in a physical transformation or is tied to a machine *is* patent eligible. *See, e.g., Diehr*, 450 U.S. at 192 ("when [a claimed invention] is performing a function which the patent laws were designed to protect (*e.g.*, transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101); *Mackay Radio & Tel. Co. v. Radio Corp. of Am.*, 306 U. S. 86, 94 (1939); *Tilghman*, 102 U.S. at 721.

Amici recognize that this Court has stated: "Transformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines." *Diehr*, 450 U.S. at 184 (quoting *Benson*, 409 U.S. at 70). However, that statement must be taken in context and in view of the facts in *Diehr*—facts establishing that a transformation was dictated by the claim in issue. While transformation may have been "the clue" in *Diehr*, neither transformation nor a machine limitation is required by this Court's precedent in all process cases. *See Benson*, 409 U.S. at 71.

2. The Federal Circuit has read limitations into "any new and useful process" not required by the language of § 101

The language of § 101 is "extremely broad." *J.E.M. Ag Supply*, 534 U.S. at 130; *see also Flook*, 437 U.S. at 588 n. 9. But the language is *not* ambiguous. *Chakrabarty*, 447 U.S. at 315. Yet, the Federal Circuit has construed the plain language § 101 in a way not contemplated by Congress, i.e., by "redefining the word 'process' in the patent statute." *Bilski*, 545 F.3d at 977 (Newman, J., dissenting). "In interpreting a statute, it is the language selected by Congress that occupies center stage . . . ." *Id.* at 987. As Congress intended by its broad language, it includes all practical applications of the statutory categories, including processes. *See, e.g., Diehr*, 450 U.S. at 187.

The breadth of the statute ensures it is a "dynamic provision designed to encompass new and unforeseen inventions." *J.E.M. Ag Supply*, 534 U.S. at 135. Denying patent protection for unforeseen inventions, as *Bilski* surely would do, is "inconsistent with the forward-looking perspective of the patent statute." *Id.* This Court should "decline to narrow the reach of § 101 where Congress has given . . . no indication that it intends this result." *Id.* at 145-46.

3. This Court has disfavored rigid application of bright-line tests

In *Bilski*, the Federal Circuit has imposed a rigid test that precludes consideration of what is actually covered by the particular patent claim in question. The *Bilski* test brings to mind the Federal Circuit's "TSM" test in *Teleflex, Inc. v. KSR Int'l Co.*, No. 04-1152, 2005 WL 23377 (Fed. Cir. Jan. 6, 2005), *rev'd*, 550 U.S. 398 (2007). This Court repeatedly has rejected the application of such rigid, bright-line tests and has instead consistently applied flexible approaches.

In *KSR*, this Court rejected the "rigid approach of the Court of Appeals" because "[t]hroughout this Court's engagement with the question of obviousness, our cases have set forth an expansive and flexible approach inconsistent with the way the Court of Appeals applied its TSM test here." 550 U.S. at 415. This Court held that "rigid preventative rules that deny factfinders recourse to common sense, however, are neither necessary under our case law nor consistent with it." *Id.* at 421.

Earlier, this Court criticized the Federal Circuit for its rigid application of the law in *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722 (2002). In *Festo*, the Federal Circuit held that prosecution history estoppel prevented the inventor from asserting any scope of equivalents. *See id.* at 737. It reviewed its precedent and found that it had "consistently applied the doctrine in a flexible way, not a rigid one." *Festo*, 535 U.S. at 738. This Court also found that the "Court of Appeals ignored the guidance of *Warner-Jenkinson*, which instructed that courts must be cautious before adopting changes that disrupt the settled expectations of the inventing community. See 520 U.S. at 28." *Festo*, 535 U.S. at 738. This Court was understandably concerned that

> Inventors who amended their claims under the previous regime had no reason to believe that they were conceding all equivalents. If they had known, they might have appealed the rejection instead. There is no justification for applying a new and more robust estoppel to those who relied on prior doctrine.

Id. at 739.

Likewise, in *Warner-Jenkinson,* this Court declined to retroactively narrow the scope of patent protection by adopting Petitioner's rigid, bright-line test to determine prosecution history estoppel, noting that "the PTO may have relied upon a flexible rule of estoppel when deciding whether to ask for a change in the first place." *Warner-Jenkinson Co. Hilton Davis Chem. Co.,* 520 U.S. 17, 32 n.6 (1997). ("To change so substantially the rules of the game now could very well subvert the various balances the PTO sought to strike when issuing the numerous patents which have not yet expired and which would be affected by our decision.")

In this case, the Federal Circuit's rigid rule will cause similar uncertainty regarding patent protection for inventions previously believed to be patent eligible, including many in biotechnology and medical technology. Investment in these inventions were based on the expectation that patent eligibility would be determined by § 101's broad language and this Court's precedent—not the Federal Circuit's rigid *Bilski* test. "Indeed, the full reach of [*Bilski's*] change of law is not clear, and . . . many existing situations may require reassessment under the new criteria." *Bilski,* 545 F.3d at 977 (Newman, J., dissenting). "Uncertainty is the enemy of innovation. These new uncertainties not only diminish the incentives available to new enterprise, but disrupt the settled expectations of those who relied on the law as it existed" before *Bilski*..

C. Additional Tests Further Restrict the Scope of Patent-Eligible Process Claims and Should be Rejected in favor of This Court's Broad Interpretation of § 101

To determine whether the claimed invention is patent eligible under § 101, the appropriate question to ask is whether the claimed invention is a law of nature, natural phenomenon or abstract idea *per se*. However, several additional tests have been applied from time to time. The machine-or-transformation test, at issue here, is among them. Two others are those labeled "preemption" and "post-solution activity." *See, e.g., Benson,* 409 U.S. at 71-72 (preemption); *Flook*, 437 U.S. at 591 (post-solution activity). In *Bilski*, the Federal Circuit relied on these additional tests. 545 F.3d at 957, 562 (preemption and post-solution activity, respectively). While these additional tests may appear helpful in a given case, their application often has caused confusion and likely has led to the inappropriate loss of patent rights in many cases.

A particularly misleading test is that involving preemption. If a claim were granted to an abstract idea, law of nature, or natural phenomenon *per se*, then that claim would wholly preempt all its uses. To the extent cases have so held, those holdings are consistent with § 101. *See, e.g.*, *Benson*, 409 U.S. at 71-72 ("patent would wholly preempt the mathematical formula and in practical effect would be a patent on the algorithm itself"). However, when a claim limits such a use, it does not preempt an abstract idea, law of nature or natural phenomenon, and the concept of preemption should not be applied. *See, e.g., O'Reilly v. Morse*, 56 U.S. 62, 112-16 (1854) (claim 8 limited to using electromagnetism "for marking or printing intelligible characters, signs, or letters" and thus *not preempting* all uses of electromagnetism but rather is overly broad (a § 112 problem)); *Diehr*, 450 U.S. at 187 (claim to a process for molding synthetic rubber held patentable because while the "process admittedly employs a well-known mathematical equation," the inventors did "not seek to *preempt* the use of that equation").

By its very essence, a patent grants the inventor the right to exclude others from practicing the claimed invention, in other words, to *preempt* others from making, using, selling, offering for sale, or importing the claimed invention. The scope of this exclusionary right depends upon what is in the prior art and the inventor's ability to satisfy § 112 requirements. Confusion with the preemption doctrine arises when, instead of considering whether the claim preempts the fundamental principle in question, courts ask whether the claim unduly *preempts the field of invention*, blocking others from entering the field. *See, e.g., Bilski*, 545 F.3d at 957 ("pre-emption of all uses of the principle *or in only one field* . . . indicate the claim is not limited to a particular application of the principle") (emphasis added). Such an inquiry is not appropriate and confuses concerns about patent eligibility with those relating to other provisions of title 35, such as § 112 (breadth) and §§ 102 and 103 (patentability in view of the prior art). Unless an inventor preempts a law of nature, natural phenomenon or abstract idea *per se*, his or her ability to exclude (preempt) others from making, using, selling offering for sale or importing the claimed invention is a function of §§ 112, 102 and 103, not of § 101.

The "post-solution," or "extra-solution," test further confuses the law. Since "all inventions can be reduced to underlying principles of nature," the subject matter of an invention must be viewed *in its entirety* to determine patent eligibility. *Diehr*, 450 U.S. at 188, 189 n.12. This principle is essential to biotechnological patents, since inventions within this discipline inherently relate to the natural phenomena and biological processes of living things. Yet the "post-solution" or "extra-solution" test invites dissecting the claim and ignoring certain claim language. *Compare Diehr*, 450 U.S. at 175 n.5 (giving weight to all the claim limitations, including that requiring "opening the press automatically when a said comparison indicates equivalence") *with id.* at 215 (Stevens, J., dissenting) (suggesting that the mold-opening limitation should be treated as post-solution activity and given no "legal significance").

Similarly, the focus should be on the claim *as a whole* and not on what a court believes the "inventor claims to have discovered." *Diehr*, 450 U.S. at 205 (Stevens, J., dissenting) (suggesting this latter approach). This latter inquiry belongs with a patentability analysis under §§ 102 and 103. Making it part of the § 101 inquiry confuses the novelty and nonobviousness issues with the issue of whether the claim is to a law of nature, natural phenomenon or abstract idea. *See, e.g., Flook*, 437 U.S. at 591-95; and *Diehr*, 450 U.S. at 205-27 (Stevens, J., dissenting). "The 'novelty' of any element or step in a process . . . is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories . . . ." *Diehr*, 450 U.S. at 188-89.

Like the "preemption" and "extra-solution activity" tests, the Federal Circuit's machine-or-transformation test hinders appropriate application of § 101:

> [It] propagates unanswerable questions: What form or amount of "transformation" suffices? When is a

> "representative" of a physical object sufficiently linked to that object to satisfy the transformation test? . . . . What link to a machine is sufficient to invoke the "or machine" prong? Are the "specific" machines of *Benson* required or can a general purpose computer qualify?

Bilski, 545 F.3d at 1015 (Rader, J., dissenting).

Amid the above-described confusion, this Court now has the opportunity to clarify application of § 101. *Amici* respectfully request that it do so by reaffirming its long-standing principles underlying a § 101 analysis and applying them to the claim as a whole rather than relying on confusing concepts, rigid tests, or alternative approaches that have arisen in prior cases. By doing so, the governing standard of § 101 will conform to past precedent, promote science and the technological arts, and will not further confuse the law on patent-eligible subject matter.

CONCLUSION

For the foregoing reasons, *Amici* respectfully request this Court to set aside the Federal Circuit's *Bilski* test and reaffirm the breadth of 35 U.S.C. § 101 to include "any new and useful process," except one to a law of nature, natural phenomenon, or abstract idea *per se*.

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Respectfully submitted,

Thomas DiLenge
General Counsel
Hansjorg Sauer, Ph.D.
Deputy General Counsel
Biotechnology Industry
Organization
1201 Maryland Ave., S.W.
Suite 900
Washington, DC 20024
(202) 962-6695

Christopher L. White
General Counsel
Advanced Medical Technology
Association
701 Pennsylvania Ave., N.W.
Suite 800
Washington, DC 20004
(202) 783-8700

Howard W. Bremer
Emeritus Patent Counsel
Wisconsin Alumni Research
Foundation
614 Walnut St.
13th Floor
Madison, WI 53726
(608) 263-2500

E. Anthony Figg
Counsel of Record
Nancy J. Linck, Ph.D.
Minaksi Bhatt
Martha Cassidy, Ph.D.
1425 K St., N.W.
Suite 800
Washington, DC 20005
(202) 783-6040

P. Martin Simpson, Jr.
Managing Counsel
Business Transactions & Land Use
Office of General Counsel
The Regents of the
University of California
1111 Franklin St.
12th Floor
Oakland, CA 94607
(510) 987-9800

Counsel for Amici Curiae
Biotechnology Industry Organization,
Advanced Medical Technology Association,
Wisconsin Alumni Research Foundation &
The Regents of the University of California

AMICUS
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IN THE
SUPREME COURT OF THE UNITED STATES

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

DAVID J. KAPPOS, UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

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BRIEF OF BLOOMBERG L.P. AS *AMICUS CURIAE* IN SUPPORT OF RESPONDENT

Kelsey I. Nix
Counsel of Record
William M. Ried
Heather M. Schneider
WILLKIE FARR &
GALLAGHER LLP
787 Seventh Avenue
New York, NY 10019
(212) 728-8000

Counsel for Amicus Curiae Bloomberg L.P.

October 2, 2009

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INTEREST OF AMICUS CURIAE[1]

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[1] No counsel for a party authored this brief in whole or in part, and no such counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than the *amicus curiae*, or its counsel, made a monetary contribution intended to fund its preparation or submission. The parties have consented to the filing of this brief.

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SUMMARY OF ARGUMENT

Business and financial methods are not patentable under Section 101 for two reasons. First, business and financial methods are not "useful arts" as required by the Constitution. Second, business and financial methods do not satisfy the machine-or-transformation test.

The threshold question under Section 101 is whether the claimed process would *promote innovation in the useful arts.* The Constitutional purpose of the patent system is to promote innovation in science, industry, and technology—not economics, finance, or business. Business and financial methods fail this threshold "useful arts" inquiry and therefore are not patentable.

Section 273's reference to methods of doing business does not demonstrate a Congressional intent that business methods should be patentable. Congress enacted Section 273 of the Patent Act as a response to the Federal Circuit's ruling in *State Street* that business methods should be patentable. However, Section 273 does not suggest that Congress intended to allow patents on inventions that do not promote the useful arts. Indeed, that would impermissibly contravene the Constitution.

Second, if a process satisfies the threshold inquiry and qualifies as a "useful art," the next step in the analysis is whether the patent claims *preempt* *the public's use of a fundamental principle.* Fundamental principles include laws of nature, natural phenomena—and the types of abstract ideas, mental processes, and mathematical algorithms that underlie many business and financial methods. This Court has consistently held that no one should be able to exercise exclusive rights over fundamental principles.

The machine-or-transformation test remains a valuable clue (although not the exclusive test) to determine whether a patent claim on a process would impermissibly preempt a fundamental principle. The machine-or-transformation test, if applied to subject matter that promotes the useful arts, provides a useful indication of the proper boundaries for patentability.

The test also demonstrates that business and financial methods like Bilski's are not patentable under Section 101. Many business and financial methods are based on abstract ideas, mental processes, or mathematical algorithms. The patent system does not permit one person to preempt others from using those types of fundamental principles.

In addition, business and financial methods do not involve a particular machine or transformation simply because they are implemented using a general-purpose computer, or because the computer's hard drive or random access memory is "transformed" when it stores the results of calculations. To hold that implementation of a business method in a generic computer implicates a "particular machine" or a "transformation of an article" would render those criteria meaningless.

ARGUMENT

I. Business And Financial Methods Are Not Patentable Because They Do Not Promote The Progress Of The Useful Arts.

A. The Constitutional Purpose Of The Patent System Is To Promote Innovation In Technology, Science, And Industry—Not Business Or Finance.

Recitation of a "particular machine" or "transformation" is not enough to make a process patentable—the process must also address subject matter that promotes the progress of the useful arts. Business and financial methods are unpatentable *per se*, regardless of whether they involve a machine or transformation.

The Patent Clause of the U.S. Constitution directs Congress to provide patent protection to "promote the Progress of . . . useful Arts." U.S. Const., art. I, § 8, cl. 8. This Court has cautioned that "[t]his is the *standard* expressed in the Constitution and it may not be ignored." *Graham v.*

John Deere Co. of Kan. City, 383 U.S. 1, 6 (1966) (emphasis in original).

As Respondents correctly explain, the "useful arts" relate to technological and industrial processes, not methods of conducting finance and business (which fall under the category of liberal arts). *See* Resp't Br. 16-25; *see also* Karl B. Lutz, *Patents and Science: A Clarification of the Patent Clause of the U.S. Constitution*, 18 Geo. Wash. L. Rev. 50, 54 (1949) ("The term 'useful arts,' as used in the Constitution . . . is best represented in modern language by the word 'technology.'").

Business methods are not products of the Information Age—there were "major innovations" in business and finance as far back as 1720. *See Bilski*, 545 F.3d at 973 (Dyk, J., joined by Linn, J., concurring) (citing Malla Pollack, *The Multiple Unconstitutionality of Business Method Patents*, 28 Rutgers Comp. & Tech. L.J. 61, 96 (2002)). As Circuit Judge Dyk explained, the U.S. Patent Act was meant to imitate the patent system of Great Britain. *Bilski*, 545 F.3d at 967 (Dyk, J., joined by Linn, J., concurring). At that time, methods of organizing human activity—like the business method claimed by Bilski—were not patentable. *See id.* at 970-74.

Business and financial methods do not promote the progress of the useful arts and thus are not patentable regardless of whether they recite a machine or transformation. As Circuit Judge Mayer explained, "[a]lthough business method applications may use technology--such as computers--to accomplish desired results, the innovative aspect of the claimed method is an entrepreneurial rather than a technological one." *Id.* at 1002 (Mayer, J., dissenting). As Judge Mayer explained, this Court's decisions "implicitly tether patentability to technological innovation" because they consistently require patentable processes to apply laws of nature to new and useful ends—and that is the very definition of "technology." *Id.* at 1002-3 (Mayer, J., dissenting).

Bloomberg agrees with Circuit Judge Mayer that "the patent system is intended to protect and promote advances in science and technology, *not ideas about how to structure commercial transactions*." *Id.* at 998 (Mayer, J., dissenting) (emphasis added). If the framers of the Constitution had wanted to advance innovations in business and finance through patents, they could have done so.

The goal of the patent system is to promote innovation. But sometimes "*too much* patent protection can impede rather than 'promote the Progress of Science and useful Arts,' the constitutional objective of patent and copyright protection." *Lab. Corp. of Am. Holdings*, 548 U.S. at

126-27 (Breyer, J., joined by Stevens and Souter, JJ., dissenting from dismissal of writ of certiorari) (emphasis in original). That is especially true if patents are granted on processes—such as business and financial methods—that were not endorsed by the framers of the Constitution.

B. Section 273 Does Not Evidence A Congressional Intent That Business And Financial Methods Should Be Patentable.

Petitioners suggest that business methods are necessarily patentable because Congress enacted Section 273 of the Patent Act to provide prior users of such methods a defense to patent infringement suits. *See* Pet'r Br. 29. Petitioners argue that Section 273 defines "method" in that section as "a method of doing or conducting business" and "makes no mention of methods tied to machines or transforming articles." Pet'r Br. 29.

The creation of an infringement defense for prior users of business method patents does not demonstrate a Congressional intent that business methods should be patentable. Congress enacted Section 273 as a response to the Federal Circuit's ruling in *State Street* that business methods could be patentable. Section 273 provides protection to businesses that face unprecedented infringement suits for previously unpatentable inventions. *See* Resp't Br. 47-49. However, Section 273 does not suggest that Congress wanted to contravene the Constitution by allowing patents on inventions that do not promote the useful arts. Section 273 imposes a limit on enforcement of business method patents; it does not sanction or endorse their validity.

Further, the fact that Congress added Section 273 rather than revising Section 101 or engaging in a more sweeping alteration of the Patent Act, does not prove that Congress endorsed the holding of *State Street*. This Court has cautioned that, "when, as here, Congress has not comprehensively revised a statutory scheme but has made only isolated amendments," in response to a judicial decision "[i]t is impossible to assert with any degree of assurance that congressional failure to act represents affirmative congressional approval of the Court's statutory interpretation." *Alexander v. Sandoval*, 532 U.S. 275, 293 (2001) (citation and internal quotation omitted).

As discussed above, business and financial methods are unpatentable because they do not meet the Constitutional requirement to promote the useful arts. In addition, as explained below, business and financial methods do not satisfy the machine-or-transformation test.

II. The Machine-Or-Transformation Test Also Bars The Patentability Of Business And Financial Methods.

In addition to failing to qualify as "useful arts" under the Constitution, business and financial methods are not patentable for a second reason: because they fail the machine-or-transformation test. For processes that pass the threshold inquiry and qualify as "useful arts," the analysis should be whether the claimed process would preempt the public's use of a fundamental principle—including the types of abstract ideas, mental processes, and algorithms that underlie many business and financial methods. If so, the process is unpatentable.

Section 101 of the Patent Act defines patentable subject matter to include "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof . . . ." 35 U.S.C. § 101 (2009). The patent claims at issue in this case are business method claims that cover a "method of hedging risk in the field of commodities trading." *In re Bilski*, 545 F.3d 943, 949 (Fed. Cir. 2008).

Despite the broad language of the Patent Act, not all inventions or discoveries are patentable. This Court has consistently held that patents are not allowed for laws of nature, physical phenomena, or the types of abstract ideas and mathematical algorithms that underlie business or financial methods. *See, e.g.*, *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980). Thus, one cannot patent the law of gravity or mathematical formulas because "[s]uch discoveries are 'manifestations of . . . nature, free to all men and reserved exclusively to none.'" *Id.* at 309 (quoting *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948)); *see also Gottschalk v. Benson*, 409 U.S. 63, 72 (1972) (denying patent protection to a process where "the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself").

The recurring theme throughout this Court's Section 101 jurisprudence is that patents should not be granted that would allow one patent holder to preempt the public's use of fundamental principles. This Court's decisions demonstrate that the machine-or-transformation test is useful to determine whether patenting a particular process would result in an impermissible preemption. Those decisions also show that the machine-or-transformation test, when properly applied, prevents patents on business and financial methods.

A. The Types Of Abstract Ideas That Underlie Business And Financial Methods Are Not Patentable.

This Court's decisions in *O'Reilly v. Morse*, 56 U.S. (15 How.) 62 (1854) and *The Telephone Cases*, 126 U.S. 1 (1888), teach that abstract ideas are not patentable, while practical applications of such ideas are patentable. Business and financial methods that are no more than abstract ideas, including the hedging method at issue in this case, are unpatentable under the dichotomy set forth by those two cases.

Morse upheld the patentability of Samuel Morse's telegraph and "Morse Code" system. *Morse*, 56 U.S. (15 How.) at 112. But when Morse attempted to claim the very idea of using electromagnetism to send a message by any means, this Court invalidated his claim. *Id.* at 113. Allowing such a claim would have given Morse a patent on the principle of using electromagnetism to send messages, regardless of the implementation.

In contrast, in *The Telephone Cases* this Court allowed Alexander Graham Bell to patent the use of electricity in a particular process for transmitting sounds telegraphically. 126 U.S. at 534-35. The Court distinguished Bell's claimed invention from Morse's. The Court explained that Morse's "use of magnetism as a motive power, without regard to the *particular process* with which it was connected in the patent, could not be claimed . . . ." *Id.* at 534 (emphasis added). Bell's claim, on the other hand, was valid because he was not trying to claim the use of electricity "distinct from the particular process with which it is connected in his patent." *Id.* at 535.

The analysis followed by this Court to reject Morse's eighth claim could be viewed as an early version of the machine-or-transformation test. Morse's eighth claim was not tied to any particular machine or implementation: "[t]hat is to say--he claims a patent, for an effect produced by the use of electro-magnetism *distinct from the process or machinery necessary to produce it*. . . . [N]o patent can lawfully issue upon such a claim." *Morse*, 56 U.S. (15 How.) at 120 (emphasis added).

Bilski's claimed business method is similar to the unpatentable eighth claim in *Morse*. Bilski's claimed method would cover the idea of hedging risk in the field of commodities trading. As Judge Mayer noted, "Bilski's claimed method consists essentially of two conversations. . . . His claims provide almost no details as to the contents of those conversations." *Bilski*, 545 F.3d at 1008 (Mayer, J., dissenting). As such, Bilski's claims cover the abstract idea of bringing together market participants with countervailing risk positions; the claims provide no guidance for implementing a practical application of that idea and are thus unpatentable. This analysis applies with equal force to all business and financial methods that are based on abstract ideas.

B. The First Prong Of The Machine-Or-Transformation Test Requires A "Particular Apparatus."

The machine-or-transformation test is also consistent with this Court's decision in *Tilghman v. Proctor*, 102 U.S. 707 (1881). In *Tilghman*, this Court explained that an inventor must describe *some* particular mode or apparatus for performing the claimed process to ensure that a principle is not being patented. *Id.* at 728-29.

Business or financial methods that do not recite a particular apparatus are unpatentable under the framework set forth in *Tilghman*. The recitation of generic computer hardware, as is common in many business and financial methods, is insufficient.

In *Tilghman*, the Court addressed the distinction between "a mere principle" and "a process by which a principle is applied to effect a useful result." *Id.* at 724. The Court discussed an earlier case involving a patent granted to Neilson for smelting iron in a furnace: "[t]hat a hot-blast is better than a cold-blast for smelting iron in a furnace was the principle or scientific fact discovered by Neilson; *and yet, being nothing but a principle, he could not have a patent for that.*" *Id.* (emphasis added). In contrast, the Court noted that Neilson was entitled to a patent for an implementation of that principle because he "pointed out a *particular apparatus* for that purpose, and having thus shown that the process could be practically and usefully applied." *Id.* at 25 (emphasis added).

In contrast, Bilski's claimed method does not recite a particular apparatus, nor any apparatus at all. Bilski's claim 1 describes steps for "initiating a series of transactions" and "identifying market participants," but it does not indicate what—if any—apparatus would be used to do those things. *Bilski*, 545 F.3d at 949. His claimed method is thus unpatentable.

The "particular machine" prong of the machine-or-transformation test thus provides a useful criterion for distinguishing between an unpatentable principle and a patentable implementation of that principle. Further, as explained in the following section, generic computer hardware, often recited in claims for business and financial methods, does not qualify as a "particular machine" and accordingly is insufficient for patentability under Section 101.

C. A Patent May Not Wholly Preempt Use Of A Mathematical Formula.

The machine-or-transformation test is also consistent with *Gottschalk v. Benson*, in which this Court rejected the patentability of a computer-implemented process for converting binary coded decimal numbers ("BCD") into pure binary, because allowing the patent claims would "wholly pre-empt" the use of a mathematical formula. 409 U.S. at 71. Similarly, business or financial methods that would preempt the use of a mathematical formula or algorithm are unpatentable under *Benson*.

In *Benson*, this Court explained that an algorithm for converting binary coded decimal numbers to pure binary could be carried out mentally. *Id.* at 67. In this case, however, the applicant sought to patent a method for implementing a slightly modified algorithm in a general-purpose digital computer. *Id.* at 67.

Although the patent claims at issue did not cover the algorithm *per se*, but rather a computer implementation of the algorithm, this Court was concerned that allowing the patent claims would allow someone effectively to patent the idea itself. "It is conceded that one may not patent an idea. But in practical effect that would be the result if the formula for converting BCD numerals to pure binary numerals were patented in this case." *Id.* at 71. Because "[t]he mathematical formula involved here has no substantial practical application except in connection with a digital computer . . . *the patent would wholly preempt the mathematical formula* and in practical effect would be a patent on the algorithm itself." *Id.* at 71–72 (emphasis added).

Another problem with the claims in *Benson* was that they "were not limited to any particular art or technology, to any particular apparatus or machinery, or to any particular end use." *Id.* at 64. The claims were "so abstract and sweeping as to cover both known and unknown uses of the BCD to pure binary conversion," which could be performed for a variety of end uses and through "existing machinery or future-devised machinery or without any apparatus." *Id.* at 68.

Bilski's claims recite an algorithm for hedging risk. Allowing patent protection for those claims would preempt the use of the disclosed algorithm, even if his claims recited the use of a general-purpose computer. Bilski's algorithm could be practically implemented in many different ways, using different combinations of computer hardware and software. Indeed, like the algorithm in Benson, Bilski's algorithm has "no substantial practical application except in connection with a digital computer." *Id.* at 71. If Bilski was allowed to patent his hedging algorithm simply by reciting some generic computer hardware in his claims, the "practical effect would be a patent on the algorithm itself," which would be inappropriate under Benson. *Id.* at 71-72.

Thus, proper application of the machine-or-transformation test does not permit a patent applicant to merely recite the use of a generic computer (or another type of generic machinery) to obtain a patent on an algorithm. The use of a "particular machine" must impose a meaningful limitation so the patent does not preempt the public's use of a fundamental principle. Accordingly, a business or financial method is not patentable merely because it is claimed in the context of computer hardware.

Similarly, in *Parker v. Flook*, this Court rejected a patent for a method directed to updating alarm limits using a mathematical formula. 437 U.S. 584, 585 (1978). Flook's patent application described a method of updating alarm limits on process variables (*e.g.*, temperature or pressure) in a process for catalytic chemical conversion of hydrocarbons. The Court of Customs and Patent Appeals had allowed Flook's application because the claimed uses were limited to the petrochemical industry and thus did not seek to preempt all uses of a mathematical formula. *Id.* at 587.

This Court agreed that Flook's claims did not cover *every* conceivable application of the formula for calculating alarm limits. However, in this Court's view, the claim recited nothing more than an improved method of calculation, *viz.*, a mathematical formula that is presumed to be well known. *See id.* at 595 n.18. Flook conceded that the only novel feature of his method was the improved algorithm. *Id.* at 588. The question before this Court was whether "the discovery of this feature makes *an otherwise conventional method* eligible for patent protection." *Id.* (emphasis added). The answer was no. This Court found that, "once that algorithm is assumed to be within the prior art, the application, considered as a whole, contains no patentable invention." *Id.* at 594.

This Court also emphasized that one may not attempt to patent a mathematical formula through clever claim drafting or field-of-use limitations. "A competent draftsman could attach some form of post-solution activity to almost any mathematical formula; the Pythagorean theorem would not have been patentable, or partially patentable, because a patent application contained a final step indicating that the formula, when solved, could be usefully applied to existing surveying techniques." *Id.* at 590.

Similarly, Bilski's claims would not be patentable even if they added conventional post-solution activity. For example, even if his claims identified market participants and then entered their names into a computer database, that additional limitation would not suffice to make his claims patentable.

Flook illustrates that the machine-or-transformation test must be applied flexibly to prevent patents on business and financial methods that would preempt the public's use of abstract ideas or mathematical algorithms. Adding field-of-use limitations or conventional, post-solution activity does not qualify a process for patentability if the resulting patent would nonetheless preempt the public's use of a fundamental principle.

D. To Satisfy The "Transformation" Prong Of The Test, A Process Must Do More Than Manipulate Data.

The machine-or-transformation test was enunciated most clearly by this Court in *Diamond v. Diehr*, 450 U.S. 175 (1981).

In *Diehr*, this Court addressed the patentability of a computer-implemented process for molding raw, uncured synthetic rubber into cured precision rubber products. *Id.* at 177. The "Arrhenius equation" was commonly used to calculate when to open a molding press and remove the cured product. Diehr claimed the improvement of continually measuring the temperature inside the mold, feeding this information into a computer that constantly recalculates the cure time, and signaling a device to open the molding press at the proper time. The Patent Office rejected the claims as steps carried out by a computer under the control of a stored program, which constituted nonstatutory subject matter under *Benson*. The Court of Customs and Patent Appeals reversed and held that a claim drawn to otherwise statutory subject matter does not become nonstatutory merely because a computer is involved. *Id.* at 180.

This Court affirmed that the claims were patentable, explaining that "'[t]ransformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines.'" *Id.* at 184 (citing *Benson*, 409 U.S. at 70). The Court found that Diehr's claims involved the transformation of an article, *i.e.*, raw, uncured synthetic rubber, into a different state or thing: precision synthetic rubber products. The Court found that the claims "when considered as a whole" did not attempt to patent a mathematical formula, but instead claimed an industrial process for molding rubber products. *Id.* at 192.

In contrast, Bilski's claims do not involve a particular machine or transformation. Unlike the rubber curing process in *Diehr*, Bilski's claims do not involve a technological or industrial process, do not recite any particular machinery, and do not transform any materials. At most, they transform legal or financial relationships and data representing those relationships. Such a "transformation" of abstract information does not satisfy the machine-or-transformation test. Bilski's claims, as do many business and financial methods, thus lack the critical "clue" to patentability that this Court required in *Diehr*. *Id.* at 184.

CONCLUSION

The judgment below should be affirmed.

Respectfully submitted,

Kelsey I. Nix
Counsel of Record
William M. Ried
Heather M. Schneider
WILLKIE FARR &
GALLAGHER LLP
787 Seventh Avenue
New York, NY 10019
(212) 728-8000

Counsel for Amicus Curiae Bloomberg L.P.

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Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,
v.
JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR, PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF *AMICUS CURIAE* BORLAND SOFTWARE CORPORATION IN SUPPORT OF PETITIONERS

SCOTT S. KOKKA*
*Counsel of Record
KENNETH R. BACKUS, JR.
KOKKA & BACKUS, PC
200 Page Mill Road
Suite 103
Palo Alto, CA 94306-2022
(650) 566-9912

TC+TA
4XYEDC

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QUESTIONS PRESENTED

Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("Machine-or-Transformation" test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

Whether the Federal Circuit's "Machine-or-Transformation" test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273.

INTEREST OF THE *AMICUS CURIAE*

The *Amicus Curiae*, Borland Software Corporation of Austin, Texas ("Borland") is one of the world's oldest and enduring software companies having introduced numerous innovative products. A wholly-owned subsidiary of Micro Focus International plc of Newbury, United Kingdom since July 2009, Borland produces enterprise software development applications and platforms for Application Lifecycle Management and Quality Assurance. Founded in 1981, Borland has made substantial global investments in the development of products for the software industry, and pioneered the emergence of new technologies that have enabled software products ranging from compilers, object-oriented programming languages, graphical user interfaces, web services, enterprise integrated development solutions, and development software for use across a wide variety of industries.[1]

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[1] The parties have consented in writing to the filing of this brief. No counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief, apart from the *Amicus Curiae* or its counsel. Counsel of record for the parties received notice of the *Amicus Curiae*'s intent to file this brief and written consent was granted in accordance with Supreme Court Rule 37.2(a).

SUMMARY OF THE ARGUMENT

1. Section 101 of the Patent Act provides patent eligibility for any "process, machine, manufacture, or composition of matter." This statute enumerates the four categories of eligible subject matter in the disjunctive. The language of section 101, including the word "or," has remained relatively unchanged since Congress enacted the Patent Act of 1793. The dictionary definition of the word "or" contemporary with the enactment of the statute indicates that "or" is disjunctive, and, thus, serves to separate. Consistent with the legislative history of the Patent Act of 1952 and this Court's precedents, the word "or" in section 101 has been construed as disjunctive. Therefore, process claims need only fall within any one of the statutory categories to be eligible for patent. But the Federal Circuit's new "Machine-or-Transformation" test now requires that the word "or" in the statute must be construed in the conjunctive as "and" when evaluating the eligibility of certain process claims. In particular, the "Machine-or-Transformation" test now requires a process claim to be tied to a machine. Therefore, an eligible claim must recite limitations to two statutory categories (i.e., to a process and to a machine). The Federal Circuit's test conflicts with the plain language of the statute.

2. The Federal Circuit has held that a claim combining two separate statutory classes is invalid under section 112, paragraph 2. But for purposes of patent eligibility, the Federal Circuit's "Machine-or-Transformation" test mandates that process and machine categories of § 101 must be

tied together, thereby combining two different statutory categories in a single claim. Therefore, a claim that recites a mixture of statutory categories for purposes of patent eligibility under section 101 also risks invalidity under section 112 for that same mixture of statutory categories. Therefore, the "Machine-or-Transformation" test clashes with its own jurisprudence under section 112, and consequently places patent applicants and patentees in a "Catch-22" situation.

3. This Court set forth a framework to determine patent eligibility from which the Federal Circuit strays widely. This Court declared that an inquiry must be made into whether a claim is seeking patent protection for a formula (e.g., a law of nature, physical phenomena, or idea) in the abstract. Such an inquiry explores whether a claim preempts others from using the formula in all cases, or whether the claim forecloses others from using only the combination of the formula and limitations recited in the claim, thereby permitting other processes and persons to practice different combinations of the formula with different limitations. In reaching its conclusion, the Court made no explicit references to or reliance on its analysis of the transformation of rubber into a different state or thing. The "Machine-or-Transformation" test abandons the necessity to inquire as to whether a law of nature, physical phenomena, or idea in a claim is one that is excluded from patent eligibility. Therefore, a process claim that fails the test is deemed—by the mere fact the test failed—to: (1) automatically include a law of nature, physical phenomena, or idea, and (2) preempt and foreclose the use of the law of nature, physical phenomena, or idea by

others. This test ignores the teachings of this Court.

4. The "Machine-or-Transformation" test, if affirmed by the Court, may discourage investment in new and emerging technologies in the software-related industries. Industries that develop massively multiplayer online games, networked data communications, security applications, financial services, application development and testing, and other types of software may be lose substantial value if the lower court's holding is affirmed.

5. A broad interpretation to determine patent eligibility was envisioned by Congress and the Court. Congress signaled its intent when it passed the 1952 Patent Act by indicating generally that the word "art" was replaced by "process" and intended to cover processes or methods generally.[2] Congress did not create any exceptions to the types of processes or methods that are patent-eligible. This was further reinforced by Congress' comments in the Revision Notes for Section 100.[3] In its notes to the amendment of the patent statutes to include 35 U.S.C. § 273 (i.e., the "earlier-inventor defense"), Congress reinforced its intent to maintain a broad scope of patent-eligible subject matter for process-related inventions by acknowledging that innovative business processes and methods are valuable to businesses in the financial services, software, and manufacturing

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[2] H.R. No. 82-1923, at 17 (1952).

[3] Id. at 17.

industries and, again, no legislated exceptions were created.[4]

6. Regarding the Court, its precedents illustrate that the scope of patent-eligibility was intended to be expansive. To do otherwise invites substantial loss for software-related industries, many of which have gained tremendous value in process-related patents. Specifically, Borland may lose substantial investments made in its innovative software. Further, since its successful defense in *Lotus Development Corporation v. Borland International, Inc.*, Borland may lose substantial value derived from its patent efforts over the last three decades.

7. Increasingly complex software has evolved far beyond the industrially-applied computer programs of *Benson*, *Flook*, or *Diehr*. As many of these technologies may not pass the "Machine-or-Transformation" test, Borland urges the Court to maintain its liberal interpretation of patent-eligibility, which is flexibly suited to address unforeseen technologies. If the Federal Circuit is affirmed, a potential decline in investment into American software companies and the U.S. economy may occur during a time of dire economic crisis. The Court must consider the effects of narrowly interpreting patent-eligibility in view of new and emerging technologies that are creating substantial value for our society. In short, Borland believes it would be harmed if the "Machine-or-Transformation" test becomes the exclusive test for patent-eligibility of process-

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[4] *See* CONFERENCE REPORT, INTELLECTUAL PROPERTY AND COMMUNICATIONS OMNIBUS REFORM ACT OF 1999, H.R. Rep. No. 106-464, at 121-122 (1999).

related inventions such as software under 35 U.S.C. § 101.

ARGUMENT

1. THE FEDERAL CIRCUIT HAS ERRED IN HOLDING THAT A PROCESS—AS ONE STATUTORY CATEGORY—MUST BE TIED TO ANOTHER STATUTORY CATEGORY

A. The Language of the Patent Eligibility Statute does not Require that a Process Must be Tied to a Machine.

Patent eligibility is codified in 35 U.S.C. § 101, which provides that "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter . . ." may obtain a patent. Section 101 enumerates four categories of patentable subject matter in the disjunctive. But the Federal Circuit's new test now requires that the word "or" in the statute must be construed in the conjunctive as "and" when evaluating the eligibility of certain process claims.

The "Machine-or-Transformation" test specifies that "[a] claimed process is surely patent-eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing." *In re Bilski*, 545 F.3d 943, 951 (Fed. Cir. 2008) (en banc). This new requirement, which is the first prong of the test, is at odds with the disjunctive nature and intent of the plain language in the statute. A process-related invention that does not meet the second prong must recite a claim to two statutory categories—to both a process and a machine—if it is to survive the "Machine-or-Transformation" test.

The Federal Circuit stated that the Court did not provide an explicit definition to the term "tied to" and crafted its own. *See Id.* at 954. Specifically, a process claim is "tied to" a machine if the claim recites a machine. Any recitation of a machine in a process claim is a limitation to the scope of that claim.

Thus, a claim must now recite limitations to both process and machine categories to satisfy the machine implementation prong of the "Machine-or-Transformation" test. *See Id.* at 965 (explaining that a claim is ineligible for patent if it effectively is drawn only to a mathematical algorithm, and where "[n]o machine was recited in the claim.") (citation omitted). *See Id.* at 961 (remarking that "even a claim that recites 'physical steps' but neither recites a particular machine or apparatus, nor transforms any article into a different state or thing, is not drawn to patent-eligible subject matter[,]" as the claim fails the "Machine-or-Transformation" test). *See also Id.* at 957 (specifying that "even if a claim recites a specific machine or a particular transformation of a specific article," thereby passing the "Machine-or-Transformation" test, "the recited machine or transformation must not constitute mere 'insignificant postsolution activity.'"). Accordingly, if a claim is to pass muster under the machine implementation prong, then that claim must recite limitations to both a process and a machine.

Statutory construction begins with the language of the statute. *Diamond v. Diehr*, 450 U.S. 175, 182 (1981). "[U]nless otherwise defined, words will be interpreted as taking their ordinary, contemporary, common meaning." *Id.* (quoting *Perrin v. United States*, 444 U.S. 37, 42 (1979)). Further, the Court has "cautioned that courts 'should not read into the patent laws limitations and conditions which the legislature has not expressed.'" *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980) (quoting *United States v. Dubilier Condense. Corp.*, 289 U.S. 178, 199 (1933)).

The plain meaning of the word "or" was disjunctive in the Patent Act of 1793. This Act defined the categories of statutory subject matter that is eligible for patent in language almost identical to § 101. The relevant language of the statute is as follows: "any new and useful art, machine, manufacture, or composition of matter." Act of Feb. 21, 1793, § 1, 1 Stat. 319. In view of above-identified cannons of statutory construction, the dictionary definition contemporary with the Patent Act of 1793 for the word "or" was: "a disjunctive particle, marking distribution, and sometimes opposition; it corresponds to Either, he must Either fall Or fly." Thomas Sheridan, A.M., A COMPLETE DICTIONARY OF THE ENGLISH LANGUAGE, Vol. II, (3d ed., 1790). "Canons of construction indicate that terms connected in the disjunctive . . . be given separate meanings." *Garcia v. United States*, 469 U.S. 70, 73 (U.S. 1984) (remarking that terms connected in the following manner are disjunctive: "mail matter" or "money" or "other property"), citing *FCC v. Pacifica Found.*, 438 U.S. 726, 740 (U.S. 1978) (explaining that words enumerated in the format 'word 1,' 'word 2,' or 'word 3' are "written in the disjunctive, implying that each has a separate meaning."). As with the statutory language in

FCC, § 101 includes an enumerated list of statutory categories in the disjunctive. Therefore, the word "or" in 35 U.S.C. § 101 must not be construed as mandating a conjunctive construction for the word "or," and, thus, the word "or" must not be interpreted as "and." Each of the four categories must be treated separately.

The legislative history is consistent with this statutory construction. In particular, the legislative history of the Patent Act of 1952 intended that the language of the previous patent eligibility statute was to be "preserved except that the word 'art' which appears in the present statute has been changed to the word 'process.'" S. REP. NO. 82-1979 (1952), reprinted in 1952 U.S.C.C.A.N. 2394, 2398, 2409-10. Thus, Congress intended that the disjunctive nature of the patent eligibility statute would endure, whereby a claimed invention falling within any one of the statutory categories is sufficient to be eligible for patent.

This Court's precedents have been consistent with the construction of § 101, as set forth above, and do not require that a claimed invention must cover two statutory categories. In *Kewanee Oil Co. v. Bicron Corp.* 416 U.S. 470, 483 (1974), the Court stated that: "no patent is available . . . unless it falls within one of the express categories of patentable subject matter of 35 U. S. C. § 101." "Congress has spoken in the area of those discoveries which fall within one of the categories of patentable subject matter of 35 U. S. C. § 101." *Id.* In *Diehr*, the Court explained that section 101 "is a general statement of the type of subject matter that is eligible for patent protection . . .

[based on] whether the invention falls into a category of statutory subject matter." 450 U.S. at 189-190 (citing *In re Bergy*, 596 F.2d 952, 961 (1979)). "The United States Supreme Court has never held that 'process' inventions suffered a second-class status under our statutes, achieving patent eligibility only derivatively through an explicit 'tie' to another statutory category." *In re Bilski*, 545 F.3d at 990 (Newman, J., dissenting).

The "Machine-or-Transformation" test and its machine implementation prong are incongruous with both the patent eligibility statute and the Court's precedents. Therefore, the mandatory tying of two statutory categories must be rejected to recalibrate patent eligibility determinations to comply with 35 U.S.C. § 101.

B. The Federal Circuit's "Machine-or-Transformation" Clashes with its Own Jurisprudence under 35 U.S.C. § 112.

In *IPXL Holdings, L.L.C. v. Amazon.com, Inc.* 430 F.3d 1377 (2005), which was a case of first impression at the Federal Circuit, the court held that a claim combining two separate statutory classes was invalid. The invalidity of such a claim is premised on 35 U.S.C. § 112 ¶ 2. A claim is invalid if it fails to "particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention." 35 U.S.C. § 112 (1975). In *IPXL Holdings*, the Federal Circuit ruled that a claim that recites "both a system and the method for using that system . . . does not apprise a person of ordinary skill in the art of its scope, and it is invalid under section 112, paragraph 2." *Id.* at 1384. Three years after *IPXL Holdings*, the Federal Circuit revisited the issue and stated that "no single claim may cover more than one subject matter class." *Microprocessor Enhancement Corp. v. Tex. Instruments Inc.*, 520 F.3d 1367, 1374 (2008), citing *IPXL Holdings* 430 F.3d at 1384 (holding indefinite a claim covering both an apparatus and a method of using that apparatus).

The MANUAL OF PATENT EXAMINATION PROCEDURE ("the MPEP") sets forth rules to guide the Examination Corps of the United States Patent & Trademark Office in the examination of all patent applications. The MPEP recites a rule against combining different statutory classes in a single claim, and requires the rejection of such claims. The MANUAL OF PATENT EXAMINATION PROCEDURE, § 2173.05(p)(II) (July 2008) dictates that: "[a] single claim which claims both an apparatus and the method steps of using the apparatus is indefinite under 35 U.S.C. § 112, second paragraph." (citations omitted). Notably, the MPEP continues:

> [s]uch claims may also be rejected under 35 U.S.C. 101 based on the theory that the claim is directed to neither a 'process' nor a 'machine,' but rather embraces or overlaps two different statutory classes of invention set forth in 35 U.S.C. 101 which is drafted so as to set forth the statutory classes of invention in the alternative only.

Id. citing *Ex parte Lyell*, 17 USPQ2d 1548, 1551 (1990). The MPEP comports with the above statutory construction and Court precedents. Thus, Examiners are to view § 101 as a list of statutory categories enumerated in the "alternative only" (i.e., in a disjunctive manner). *Id.*

For purposes of patent eligibility, the Federal Circuit's "Machine-or-Transformation" test mandates that process and machine categories of § 101 must be tied to each other, thereby combining two different statutory categories. In particular, a claim to a certain process must also recite a machine or apparatus. This requirement is in contravention with the prohibition of *IPXL Holdings* in that a single claim cannot overlap two different statutory classes. Therefore, a claim reciting a mixture of statutory categories for purposes of patent eligibility under 35 U.S.C. § 101 is also—and simultaneously—at risk of invalidity under 35 U.S.C. § 112 ¶ 2 for that same mixture of statutory categories. The "Machine-or-Transformation" test consequently places patent applicants and patentees in a "Catch-22" situation. Compliance with both 35 U.S.C. § 101 and 35 U.S.C. § 112 are now mutually exclusive. The Federal Circuit's "Machine-or-Transformation" test exacerbates the uncertainty in protecting patent properties and adds confusion to the patent application examination process for not only software patent applicants, but for all applicants for which a process patent is sought. This Court must clarify or dispense with the "Machine-or-Transformation" to stabilize the jurisprudence of patent eligibility at the Federal Circuit.

2. THE "MACHINE-OR-TRANSFORMATION" TEST DEPARTS FROM THE PATENT ELIGIBILITY FRAMEWORK SET FORTH IN *DIEHR*

A. Determining Patent Eligibility under Diehr Requires Preemption Analysis.

The Court set forth a framework in *Diehr* to determine patent eligibility. This framework requires that a claim must be analyzed to determine whether it preempts all uses of a law of nature, physical phenomena, or idea (i.e., in the abstract). *Id.* at 191 ("[A]n inquiry must be made into whether the claim is seeking patent protection for that formula in the abstract . . . when a claim recites a mathematical formula (or scientific principle or phenomenon of nature.")).

Such an inquiry explores whether a claim preempts others from using the equation in all cases, or whether the claim forecloses others from using only the combination of the equation and limitations recited in the claim. *See generally Id.* at 187 ("Their process admittedly employs a well-known mathematical equation, but they do not seek to pre-empt the use of that equation. Rather, they seek only to foreclose from others the use of that equation in conjunction with all of the other steps in their claimed process.").

If a claim prevents others from using the equation, then the claim seeks to preempt the use of the equation, and, therefore, is excluded from eligibility under § 101. For example, the limitations of a claim directed to only an equation preempts the use of the equation by others. But if a claim forecloses others from using only a particular combination of the equation and claim limitations while permitting others to use the equation in combination with different steps, then the application of the equation is eligible for patent. *See generally Id.* at 187. For example, a claim directed to a combination of an equation and limitations A, B, and C does not foreclose others from practicing a claimed combination including the equation and a limitation D.

In resolving the question of patent eligibility, the Court in *Diehr* analyzed the claims initially and observed that the claims "involve the transformation of an article, in this case raw, uncured synthetic rubber, into a different state or thing." *Id.* at 184. The transformation into different states or things is a "clue" or factor in determining patent eligibility. *Id.* But the Court neither ended its analysis there nor relied expressly on that observation that the claims involve such a transformation; rather, the Court performed its preemption analysis to reach its conclusion.

The Court first identified the use of the Arrhenius equation in the claim at issue. Thus, the first step in the preemption analysis is to identify a law of nature, physical phenomena, or abstract idea covered by the claim. Then, the Court explored whether the equation in the claim was otherwise limited by other steps to determine whether the equation was claimed in the "abstract." The second step in the preemption analysis, therefore, is to determine whether the claims "seek only to foreclose from others the use of that equation in conjunction with all of the other steps in their claimed process." *Id.* at 187. In *Diehr*, the Court's analysis identified other steps in the claim: "installing rubber in a press, closing the mold, constantly determining the temperature of the mold, constantly recalculating the appropriate cure time through the use of the formula and a digital computer, and automatically opening the press at the proper time." *Id.* As there were limitations in the claim beyond those directed to just the equation, other processes and persons are not be foreclosed from practicing the Arrhenius equation in combination with different limitations. Based on its analysis, the Court in *Diehr* found that the application of the equation was eligible for patent. Importantly, the Court made no explicit references to or reliance on its analysis of the transformation of rubber into a different state or thing to reach its conclusion.

B. The "Machine-or-Transformation" Test Does Not Require Preemption Analysis and Fails to Comport with Patent Eligibility under *Diehr*.

The "Machine-or-Transformation" test under *In re Bilski* does not require a preemption analysis, and, therefore, abandons the necessity to inquire as to whether a law of nature, physical phenomena, or abstract idea in a claim is one that is excluded from patent eligibility. Thus, under *In re Bilski*, a process claim that fails either the machine prong or the transformation prong is deemed—by the mere fact the test failed—to: (1) include a law of nature, physical phenomena, or abstract idea, and (2) preempt and foreclose the use of the law of nature, physical phenomena, or abstract idea by others.

By ignoring the teachings of *Diehr*, emerging and unforeseen technologies that fail the "Machine-or-Transformation" test will be deemed ineligible for patent, even though claims directed to some of the emerging and unforeseen technologies may not include a law of nature, physical phenomena, or abstract idea that are excluded from patent eligibility under § 101. The "Machine-or-Transformation" test automatically concludes that a process only embodies a law of nature, physical phenomena, or abstract idea if the process does not perceptibly transform a particular article into a different state or thing, thereby precluding inquiries into whether the claim actually seeks to foreclose others from using a fundamental principle.

The Federal Circuit acknowledged the necessity to perform a preemption analysis set forth in *Diehr* but did not include it in its test.

> *Diehr* can be understood to suggest that whether a claim is drawn only to a fundamental principle is essentially an inquiry into the scope of that exclusion; i.e., whether the effect of allowing the claim would be to allow the patentee to pre-empt substantially all uses of that fundamental principle. If so, the claim is not drawn to patent-eligible subject matter.

In re Bilski, 545 F.3d at 956. The "Machine-or-Transformation" test omits such an inquiry.

The Federal Circuit admits it did not have explicit definitions of the terms "transform" and "article" with which to fashion its test. *See generally Id.* at 954. If the "Machine-or-Transformation" test is to stand in its present form, patent eligibility will be won or lost based only on the perceptibility or physicality of the terms "transform" and "article," and whether the construction of those terms will be determined with a 19th century technological lens. It would be disconcerting if the "Machine-or-Transformation" test stands, especially as industrialized nations move from a manufacturing-based economy (i.e., that creates tangible products) to a service-based economy (i.e., that creates intangible products). The "Machine-or-Transformation" test strays widely from patent eligibility framework set forth by the Court in *Diehr* and must be rejected.

3. AFFIRMING THE FEDERAL CIRCUIT'S NARROW INTERPRETATION IGNORES THIS COURT'S PRECEDENT FOR A BROADER STANDARD UNDER WHICH EMERGING TECHNOLOGIES CAN BECOME PATENT-ELIGIBLE

A. Limiting the Judicial Determination of Patent-Eligible Subject Matter to the Exclusive Application of the "Machine-or-Transformation" Test Raises Barriers for New and Emerging Technologies in Software-Related Industries.

The Federal Circuit held that the "Machine-or-Transformation" test is the sole test for determining patent-eligibility under 35 U.S.C. § 101. *In re Bilski*, 545 F.3d at 956. However, the Court's prior precedents indicate otherwise. *See Gottschalk v. Benson*, 409 U.S. 63, 70 (1972). In contrast to the Federal Circuit, the "Machine or Transformation" test is meant to be a "clue" and not the sole test for determining patent-eligibility. This Court stated this in *Benson* and *Parker v. Flook*, followed by more definite assertions in *Diehr* that patent eligibility under 35 U.S.C. §101 should be broadly interpreted. *See Benson*, 409 U.S. at 71; *see also Parker v. Flook*, 437 U.S. 584, 589 (1978); *see* 450 U.S. at 187-188 and192 (1981).

This Court's precedent clearly establishes that patent-eligible processes may be found under 35 U.S.C. § 101 regardless of whether the "Machine-or-Transformation" test is met. *See id.* For many emerging technologies in software-related fields, inventions are often not tied to a particular machine nor intended to effect a transformation of a particular article to a different state or thing. For example, the present *Amicus Curiae* develops complex software at considerable expense in time, money, and effort to create innovative software that other organizations may use to develop specialized computer applications for use in small, medium, and large enterprises, often being delivered or executed entirely "online" without connection to the physical environment around us. Thousands of businesses and individuals in software-related industries create innovative computer programs that do not require specific types of machines or transformations and seek patent protection for their inventions. However, if the motivation of patent protection is not available, investment and motivation to innovate will likely decline.

In *Benson*, this Court specifically commented on whether a process, to be found patentable, must be tied to a particular machine or transform a particular article to a different state or thing. This Court unequivocally stated:

> "It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a "different state or thing." *We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents. It is said that the decision precludes a patent for any program servicing a computer. We do not so hold...It is said we freeze process patents to old technologies, leaving no room for the revelations of the new onrushing technology. Such is not our purpose.*" (emphasis added)

See Benson, 409 U.S. 63, 71 (1972). The Court clearly anticipated that process-related inventions may be found beyond the confines of the "Machine-or-Transformation" test. As many software-related inventions are neither coupled to a particular machine nor transform a particular article into a different state or thing, the reliance upon a singular test to determine patent-eligibility is flawed. Further, the continued perception of software as purely mathematical is also inaccurate because of the advent of higher order programming and formatting languages that no longer require the direct input of mathematical formulae (e.g., object-oriented programming that utilizes objects to define groups of functions and not individual functions themselves). At the time of *Benson*, *Flook*, and *Diehr*, contemporary computer programming was largely based on unstructured computer programming techniques that typically required writing individual routines, sub-routines, and mathematically-based operations. However, computing technologies today have evolved far beyond the use of writing program code based on purely mathematical formula such as the program code used to convert binary coded decimals into pure binary code as set forth in *Benson*. Object-oriented programming now allows software developers to write program and source code based on practical applications such as modeling workflows or simulating operation of a machine.

With the advent of object-oriented programming and higher order programming and formatting languages, software has become fundamentally complex and defines relationships between data structures such as objects, classes, libraries, or data constructs that are not found in nature, but are intangible creations of man and, thus, should be patentable. These new and useful processes should also be patentable because software often acts, models, or performs functions similar to physical machines producing benefits or results that are as useful as a patent-eligible rubber-curing process under the "Machine-or-Transformation" test. In other words, the Patent Act, in its presently amended form, was not intended to promote the *contemporaneous* useful arts of 1952, 1999, or 1793, but was intended to be ubiquitously applied to determining patent-eligible subject matter in any era or epoch of human technological development.

As amended from "art" by the 1952 Patent Act, the term "process" was intended to describe subject matter that should be patent-eligible as these promote "...the Progress of Science and useful Arts," as set forth by the Constitution in Article 1, Section 8. To allow the lower court's holding to stand invites the destruction of untold value and investments made in process-related software inventions and disregards a historically broad interpretation of 35 U.S.C. § 101.[5]

Today, this Court's prior precedents for establishing patent-eligibility are broader than the "Machine-or-Transformation" test, as stated by the Federal Circuit. Due to advances in computing and information technology such as increasingly powerful processors, computer memories, network communications systems, devices, and techniques, and reduced transistor and semiconductor feature sizes, many innovations in these fields may not be patent-eligible under the "Machine-or-Transformation" test because they may not require any type of specialized equipment other than a "general purpose computer." For example, software applications developed by the present *Amicus Curiae* may be used by companies to develop other computer programs intended for downloading over the Internet (or another data network) or installed on a general purpose computer from a type of storage medium known as a "CD-ROM" (i.e., "Compact Disc-Read-Only Memory"). Many computer programs are written exclusively for performing a task or set of tasks between computers, often being hosted or served from a general purpose computer, server, computing cloud, or the like. This software may not be tied to a particular machine or transform a particular article into a different state or thing. In many instances, software developers may not be aware of the specific machines (e.g., servers) that are being used to host their applications, which may reside in "server farms" that are far-removed from the physical locale of the software development site. Given current trends in software development, the present *Amicus Curiae* urges the Court to reinforce its interpretation that a broader reading of 35 U.S.C. § 101 is consistent with its prior precedents and suitable for application to process-related inventions such as software and other new or emerging technologies.

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[5] As of the time of submission of this brief, the present Amicus Curiae notes that several cases have been appealed to the Federal Circuit, which has issued a stay pending the outcome of the present case, but all of which are raising similar issues as to whether and how a process-related invention is patent-eligible under 35 U.S.C. § 101. Specifically, each of the stayed appeals may be implemented using software, increasing the urgency of requesting this Court's intervention to reaffirm established precedent that process-related inventions may be found without requiring passage under the "Machine-or-Transformation" test. *See Every Penny Counts, Inc. v. Bank of America Corp.*, No. 2:07-cv-042, slip op. (M.D. Fla. May 27, 2009), *motion for stay pending*, No. 2009-1442 (Fed. Cir. Jul. 27, 2009). *See also CyberSource Corp. v. Retail Decisions, Inc.*, No. 3:04-cv-03268, slip op. (N.D. Cal. Mar. 27, 2009), *appeal stayed*, No. 2009-1358 (Fed. Cir. Jul. 30, 2009). *See also Fort Properties, Inc. v. American Master Lease, LLC*, No. 8:07-cv-365, slip op. (C.D. Cal. Jan. 22, 2009), *appeal stayed*, No. 2009-1242 (Fed. Cir. Jun. 11, 2009).

B. The Court's Precedents Do Not Limit Patent-Eligibility for Process-Related Inventions to Those that Meet the "Machine-or-Transformation" Test.

In *Benson*, the Court stated that a process may be patentable even if it does not meet the "Machine-or-Transformation" test. *See* 409 U.S. at 71. This guideline was further reinforced by Justice Stevens writing for the majority in *Flook*, when he stated that:

> "[A]n argument can be made, however, that this Court has only recognized a process as within the statutory definition when it was either tied to a particular apparatus or operated to change materials to a "different state or thing." See *Cochrane v. Deener*, 94 U.S. 780, 787-788. As in Benson, we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents." See *Parker v. Flook*, 437 U.S. at 589.

By contrast, the Federal Circuit contends that this breadth of interpretation does not exist because these statements were not recited in *Diehr*. *In re Bilski*, 545 F. 3d at 956. Justice Stevens did not opine, nor has any Justice writing for a majority of the Court, ever stated that the "Machine-or-Transformation" test was intended to be the sole and exclusive test for determining patent-eligibility. The so-called "caveat" (i.e., that process-related inventions may be found patentable apart from those that meet the

"Machine-or-Transformation" test) was absent from the Court's opinion in *Diehr* and the Federal Circuit assumed that the Court had narrowed the scope of patent-eligible subject matter. *See In re Bilski*, 545 F.3d at 956. However, the Court's use of open-ended language in the decision in *Diehr* suggests that the Court was not receding from a broader interpretation of 35 U.S.C. § 101. *See* 450 U.S. at 184. Further, if the Court meant to draw down the scope of interpretation of patent-eligible subject matter, it would have done so. In other words, the Federal Circuit improperly assumed this Court's intent in the absence of any other indications of the scope of patent-eligible processes.

The Federal Circuit failed to take into account the analysis performed by this Court establishing that processes may be patentable, regardless of particular machinery or transformations coupled thereto. In *Diehr*, the Court reinforced the long-standing, guiding principle by which any invention is deemed to be patentable based on whether it claims a law of nature, mathematical algorithm, or fundamental principle wholly or claims an *application* thereof. As recited by the Court previously, "[T]hat a process may be patentable, irrespective of the particular form of instrumentalities used, cannot be disputed." *See Cochrane*, 94 U.S. at 787-788. If claimed as a process, software should need to exhibit nothing more to gain patent-eligibility than show that pre-emption of all uses of a fundamental principle, law of nature or physics, phenomenon of nature are not ought. *See Diehr*, 450 U.S. at 191.

Software has a practical application that should be patent-eligible, regardless of whether it meets the "Machine-or-Transformation" test. As a process-related invention, software typically relies upon the use of computer programs to help encode or generate the necessary object and source code that provides instructions to a computer processor (or group thereof) for performing a function or set of functions. The Federal Circuit's assumptive logic that patent-eligible processes may be found apart from the "Machine-or-Transformation" test disregards the Court's guidelines that patent-eligible processes may be also be found apart from the test when a practical application is determined. *See Diehr*, 450 U.S. at 187-188. The lower court's flawed logic assumes that the Court intended to disavow breadth in its interpretation of 35 U.S.C. § 101 because it did not repeat the "caveat" set forth in *Benson* or *Flook*. *See In re Bilski*, 545 F.3d at 956. The present *Amicus Curiae* disagrees in that the Court signaled its continued intent to ensure that the scope of patent-eligible processes remained broadly interpreted in order to accommodate new and emerging technologies, "[I]t is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection." *See Diehr*, 450 U.S. at 187-188.

C. Alternatively, if the Definitive Test for Patent Eligibility is the "Machine-or-Transformation" Test, the Court Must Establish its Precise Contours for Process-Related Inventions such as Software.

If, as stated in *Benson*, the "Machine-or-Transformation" test is the "clue" to determining patent-eligibility under 35 U.S.C. § 101, the Court is urged to provide guidance to the software industry on its full interpretation. Already, the present *Amicus Curiae* is contending with a wide variety of inconsistent examination results for software-related inventions from the Patent and Trademark Office and, without clear guidance from this Court, will undoubtedly continue to do so. Further, there is concern regarding lower courts that are attempting to apply the "Machine-or-Transformation" test, including interpreting the "machine" prong, but without guidance from either the Federal Circuit or this Court. For example, in *CyberSource Corp. v. Retail Decisions, Inc.*, No. 3:04-cv-03268, slip op. (N.D. Cal. Mar. 27, 2009), *appeal stayed*, No. 2009-1358 (Fed. Cir. Jul. 30, 2009), the District Court applied the "machine" prong of the "Machine-or-Transformation" test in a patent infringement matter without guidance from the Federal Circuit or this Court resulting in an appeal of the decision. Fortunately, this appeal has been stayed pending the outcome of the present case.

Without guidance or precedent from either the Federal Circuit or this Court, District Courts such as that in *CyberSource*, will mistakenly jeopardize the patent rights of legitimate inventors and assignees of software-related inventions. In light of the Federal Circuit's admission that "[W]e leave to future cases the elaboration of the precise contours of machine implementation, as well as the answers to particular questions, such as whether or when recitation of a computer suffices to tie a process claim to a particular machine," the present *Amicus Curiae* believes that the "future" case is the present one. *See In re Bilski*, 545 F.3d at 962. If the "Machine-or-Transformation" test is to be the exclusive challenge to patent eligibility, this Court must set forth (and the lower courts shall follow) the precise contours of the test so as to create predictable, enforceable rights for inventors seeking patents on process-related inventions. Further, by defining the precise contours of the "machine" prong of the "Machine-or-Transformation" test, lower courts will be discouraged from speculative interpretation and application of this Court's precedent.

4. CONGRESSIONAL INTENT BEHIND THE ENACTMENT OF 35 U.S.C. § 273 CLEARLY ENVISIONED PROCESSES SUCH AS BUSINESS METHODS AND SOFTWARE AS BEING WITHIN THE SCOPE OF PATENT-ELIGIBLE SUBJECT MATTER UNDER 35 U.S.C. § 101

A. Congress' Intent to Establish a Legislative Defense to Infringement for Business Methods Indicates Processes Other Than Those Meeting the "Machine-or-Transformation" Test are Patentable under 35 U.S.C. § 101.

The enactment of the Intellectual Property and Communications Omnibus Reform Act of 1999 provided a "first inventor defense" against new forms of process-related inventions that were previously thought unpatentable. However, Congress' enactment of an infringement defense in lieu of passing legislation to ban patents from being issued for inventive methods for doing and conducting business, as set forth in 35 U.S.C. § 273(a)(3), signaled that the legislature intended that existing patent law should be interpreted and applied to emerging technologies in fields such as "...financial services, software companies, and manufacturing firms-any business that relies up on innovative business processes and methods."[6] If Congress had intended to enact a policy-driven change to the patent laws believing the current patent laws were over-reaching with regard to process-related inventions, it would have done so.

In the Conference Report for the Intellectual Property and Communications Omnibus Reform Act of 1999, Congress acknowledged the on-going breadth of interpretation of 35 U.S.C. § 101 when it stated:

> "Subtitle C strikes an equitable balance between the interest of U.S. inventors who have invented and commercialized business methods and processes, many of which until recently were thought not to be patentable, and U.S. or foreign inventors who later patent the methods and processes."

See CONFERENCE REPORT, INTELLECTUAL PROPERTY AND COMMUNICATIONS OMNIBUS

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[6] *See* CONFERENCE REPORT, INTELLECTUAL PROPERTY AND COMMUNICATIONS OMNIBUS REFORM ACT OF 1999, H.R. Rep. No. 106-464, 122 (1999).

REFORM ACT OF 1999, H.R. Rep. No. 106-464, at 121.

Clearly, Congress did not intend to curtail the scope of interpretation or applicability of 35 U.S.C. § 101, but instead intended that the existing law is broad enough to apply to new and emerging technologies, although the present *Amicus Curiae* maintains that software is no longer an "emerging" technology given its development over the last half-century.

B. By Broadly Interpreting the Scope of the Patent Statute to Include Process-Related Inventions such as Software, the Court is Not Making Policy, but Enforcing that Already Intended by Congress.

It is not policy-making to interpret the scope of the statute to encompass new and novel processes beyond those of the Industrial Age. As stated by the Court in *Diehr*:

> "It is for the discovery or invention of some practical method or means of producing a beneficial result or effect, that a patent is granted....It is when the term process is used to represent the means or method of producing a result that is patentable, and it will include all methods or means which are not effected by mechanism or mechanical means." *See Diehr*, 450 U.S. at 184; *see also Corning v. Burden*, 15 How. 252, 267-268 (1854).

Given the breadth of interpretation of 35 U.S.C. § 101 for finding patent-eligible processes, policy has been established by Congress and should be enforced by this Court's interpretation of its precedent in the present case.

The present *Amicus Curiae* acknowledges that the Court must exercise care and diligence when interpreting existing law with regard to its applicability to emerging technologies. As Justice Stevens stated in *Flook*, "...It is our duty to construe the patent statutes as they now read, in light of our prior precedents, and we must proceed cautiously when we are asked to extend patent rights into areas wholly unforeseen by Congress." 437 U.S. at 596. However, the application of 35 U.S.C. § 101 to methods of doing or conducting business was not wholly unforeseen by Congress. What was unforeseen may have been the instrumentalities (e.g., the Internet, networked computers and telecommunications systems, electronic commerce, logistics management software, commodities and futures trading software, electronic security systems and software, financial management software, among others) by which these methods are effected. Regardless, and as stated by this Court, a "...process may be patentable, irrespective of the particular form of instrumentalities used, cannot be disputed." *See Cochrane*, 94 U.S. at 787-788.

The Court is urged to maintain its vigilance and caution with regard to interpreting the law and its precedents when considering whether the "Machine-or-Transformation" test is the sole test for determining patent-eligibility under 35 U.S.C. § 101. The Federal Circuit's requirement of the

"Machine-or-Transformation" test as the only challenge to patent eligibility disregards precedent of this Court and Congress' intention that process-related inventions should be held to a broader categorical scope of patent-eligible subject matter.

5. THE SCOPE OF 35 U.S.C. § 101 SHOULD BE BROADLY INTERPRETED TO AVOID DISCOURAGING INNOVATION AND INVESTMENT IN SOFTWARE-RELATED INDUSTRIES

A. Innovations in Software-Related Industries are Becoming Increasingly Complex and are not Necessarily Reliant on a Particular Machine or Transformation of a Particular Article Into a Different State or Thing.

Thomas Jefferson believed that our patent statutes should recognize that "...ingenuity should receive a liberal encouragement." 5 Writings of Thomas Jefferson 75-76 (Washington ed. 1871). The promise of a grant of legal privilege conveying exclusive patent rights is the bargained-for exchange that motivates inventors to apply for a patent and disclose his invention to the public. If the incentive is removed, inventors may not only fail to disclose their inventions, but investors may divert investment and resources into other activities, where economic or other barriers to entry may be erected in order to mitigate the risk of losing substantial investments in personnel, time, energy, resources, and finance. Affirming the Federal Circuit will eliminate a strong incentive to invest in innovation, particularly for technologies such as software, which are often very technically complex and devoid of any specific hardware (i.e., particular machine) requirement or transformation, requiring substantial time (often measured in months, if not years, of development time) and money in order to bring a new service, product, or technology to market.

Software-related innovations in fields such as enterprise software (of various sort), virtual machines (i.e., a software-based emulation of a physical machine), shard or instance-based computing platforms, mobile computing platforms and devices, distributed computing platforms (e.g., cloud computing), middleware applications (i.e., computer programs that provide functions between other computer programs), electronic commerce, financial transactions and services, and others are increasingly divorced from the need for application-specific hardware requirements. Applications (i.e., software) such as these are often distributed over data networks such as the Internet or World Wide Web in order to allow customers, individuals and businesses alike, to find, purchase, download, or stream (i.e., temporarily executing an application from a remote location without downloading a copy to one's computer) data, information, or content. Many of these process-related innovations, however, may likely run afoul of the "Machine-or-Transformation" test, failing this Court's enforcement of its traditionally broad scope of interpretation of patent-eligibility. Information technology has advanced to the point where the Federal Circuit's interpretation of existing patent laws is obsolete, not the law itself.

The enactment of the 1952 Patent Act clearly establishes that patent eligibility of inventions, including processes or methods, was intended to have a broad scope of application. Specifically, the Report from the Committee on the Judiciary for the House of Representatives for the 1952 Patent Act provided that:

> “"Process" has been used as its meaning is more readily grasped than “art” as interpreted, and the definition in section 100 (b) makes it clear that “process or method” is meant. The remainder of the definition clarifies the status of processes or methods which involve merely the new use of a known process, machine, manufacture, composition of matter, or material; they are processes or methods under the statute and may be patented provided the conditions for patentability are satisfied.” H.R. No. 1923, at 17 (1952).

Congress amended 35 U.S.C. § 101 to clarify the types of processes or methods that may be eligible for patenting, assuming other conditions for patentability are met, including 35 U.S.C. §§ 102 (anticipation of novelty) and 103 (obviousness). *See* H.R. No. 1923, at 6. As Congress did not further elaborate in its passage of the 1952 Patent Act on specific types of patent-eligible processes or exclusions therefrom, it is apparent that a broader interpretation of 35 U.S.C. § 101 than that provided by the Federal Circuit was intended. When combined with the subsequent judicial interpretations under *Benson*, *Flook*, and *Diehr*, illumination is shed upon the proposition that a broad scope to 35 U.S.C. § 101 is appropriate and was intended to accommodate new and emerging complex technologies, regardless of whether a particular machine or transformation is involved. *See Benson*, 409 U.S. at 71; *see also Flook*, 437 U.S. at 589. The present *Amicus Curiae* urges this Court to import into its analysis of the lower court's decision its prior precedents and Congress' intent behind 35 U.S.C. § 101, not the historical, technological context surrounding those events (i.e., the Industrial Revolution).

B. Restricting Patent-Eligibility for Software-Related Inventions to Only Those that Meet the "Machine-or-Transformation" Test Increases Vulnerability of Software-Related Inventions to an Increasing Amount of Piracy and Theft.

Having a strong intellectual property regime, including patents, for process-related inventions is a crucial part of the U.S. economy, particularly for information technology concerns such as software companies and any type of organization that develops software. Despite the current economic crisis, worldwide information technology budgets are expected to top $750 billion in 2009.[7] The present *Amicus Curiae* provides, in addition to application lifecycle management (ALM) software, application testing and quality assurance (QA) computer programs for use by customers, typically enterprises or other large organizations. By some estimates, annual revenues in the testing and QA sub-market alone exceeds $2 billion.[8] In other sectors such as application testing and gaming software, annual revenues are also increasing at a dramatic rate.[9] Despite these substantial markets, jobs, and revenue increases, the U.S. software market typically accounts for over $45 billion annually, but loses roughly $9.1 billion to piracy (i.e., copying of unlicensed software).[10] In the intervening years since *Diehr*, patent protection for process-related inventions has increased. When methods of operation for user interface software was found to be functional and therefore uncopyrightable in *Lotus Development Corporation v. Borland International, Inc.*, software development firms turned to the use of patents to protect its innovations. *See* 49 F.3d 807 (1st Cir. 1995), *aff'd per curiam*, 516 U.S. 233 (1996). Following *Borland*, software piracy has not only held steady against the backdrop of increased U.S. software patent filings and issuance, but the U.S. currently has the lowest software piracy rate in the world at twenty percent (20%).[11] Affirming the Federal Circuit's exclusive assertion of the "Machine-or-Transformation" test may have a reversing effect that could not only cost the U.S. its lead in software-related industries, but also result in a dramatic rise of piracy-related losses. In other words, the present *Amicus Curiae* maintains that a broad scope of patent-eligibility is important for the U.S. to maintain its leadership position in the field of software.

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[7] *See* Gary Kim, *U.S. IT Spending to Dip Slightly* (visited Aug. 4, 2009) <http://www.tmcnet.com/tmcnet/videos/video-news/articles/56329-us-it-spending-dip-slightly.htm>.

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[8] *See* Darryl K. Taft, *Micro Focus Gains ALM Muscle with Borland Compuware Unit Buys* (visited Aug. 4, 2009) <http://www.eweek.com/c/a/Application-Development/Micro-Focus-Gains-ALM-Muscle-with-Borland-Compuware-Unit-Buys-667571/>.

[9] *See* Tor Thorsen, *Study: 2012 Game Revs to Hit $68.3 Billion* (visited Aug. 1, 2009) <http://www.gamespot.com/pc/rpg/worldofwarcraft/news.html?sid=6192719>.

[10] *See A Fifth of PC Software in United States is Pirated, Posing Challenges to High Tech Sector and Cyber Security* (visited Aug. 1, 2009) <http://www.bsa.org/country/News%20and%20Events/News%20Archives/global/05122009-idc-globalstudy.aspx>.

The U.S. has the lowest piracy rate in the world due in no small measure to the existence of strong intellectual property rights, including the availability of patents for process-related inventions such as software. As the world's largest software market, the U.S. cannot afford to eliminate patent protection for process-related inventions, depriving thousands of companies and individuals of valuable patent rights. The present *Amicus Curiae* has garnered substantial revenues in the hundreds of millions of dollars from its wielding of patent rights that it has accrued over the last three decades. Further, maintaining the Federal Circuit's narrow interpretation of the scope of patent-eligible subject matter may well result in a dramatic rise of piracy and theft, which may also contribute to heightened national security concerns due to the unauthorized exploitation of unlicensed software left unprotected except by copyright, which is not a recognizable form of intellectual property protection in high-piracy regimes such as China. In short, reliance upon the "Machine-or-

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[11] *See id.*

Transformation" test as the exclusive test for determining patent-eligibility will irrevocably damage the U.S.' standing as the world's leading software market. Further, a pending appeal before the Enlarged Board of the European Patent Office regarding the patentability of software-related inventions will undoubtedly be influenced by the decision of this Court and affect global software markets.[12]

C. Without Exclusionary Patent Rights, Innovators in the Software-Related Industries May Have Less Incentive to Innovate and Investors May Have Less Incentive to Invest in American Companies and the US Economy.

Unlike the rubber-curing process in *Diehr* or the flour manufacturing processes in *Cochrane*, many software applications do not necessarily require Industrial Age implementations in order to be practiced, but often produce beneficial uses or results. Process-related inventions in software serve many useful and practical purposes, but do not, and should not be forced to include particular machinery or effect transformation of a particular article into a different state or thing. Due to the advent of new communication technologies such as the Internet and data networking technologies, individuals and businesses in software-related industries are able to generate substantial returns on investments by employing and training a skilled development labor force, which fosters innovation. Further, these companies are motivated by the potential gain of exclusionary rights awarded under a patent. However, investing in a software-related company requires, in part, evaluating its intellectual property assets and determining how and whether these assets may be employed to gain a competitive position in a highly competitive market place. As the barriers to entering numerous software industries such as electronic commerce, social networking, online gaming, enterprise resource planning (ERP), customer relationship management (CRM), QA, and many others have been eased due to the growing use of Software as a Service (SaaS), distributed computing platforms (e.g., cloud computing), and other enabling technologies, investors must seek out companies that have developed other competitive advantages such as patents.

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[12] *See* Letter from Alison Brimelow, President, *European Patent Office*, to Peter Messerli, Chairman of the Enlarged Board of Appeal, European Patent Office (October 22, 2008) <http://documents.epo.org/projects/babylon/eponet.nsf/0/B89D95BB305AAA8DC12574EC002C7CF6/$File/G3-08_en.pdf>.

For many companies, investment in patent protection is a costly effort and time-consuming strategic activity. Investment in gaining patent protection is typically one of the most important decisions any software company makes and, by affirming the lower court's holding, valuable intellectual property is left vulnerable to piracy, theft, and, even, exploitation for purposes of gaining access to national security information. The use of an Industrial Age test to determine patent-eligibility for Information Age innovations is fundamentally flawed and this Court is urged to elaborate upon the proper scope of patent-eligible processes under 35 U.S.C. § 101. In other words, to require a software-related invention to be tied to a particular machine or transform a particular article to a different state or thing is analogous to requiring the addition of a sail to a modern day U.S. Navy warship already replete with surface-to-air missiles and phased array radar systems.

New and emerging technologies fall under the scope of interpretation of 35 U.S.C. § 101 and should not be restrained by impermissibly narrow interpretations such as those set forth by the Federal Circuit. Both Congress and this Court have anticipated the arrival of unforeseen technologies and existing laws should not be narrowly interpreted to accommodate past technological contexts. The goal of obtaining a U.S. patent derives significant benefit and revenue for the country and encourages further investment in innovation at a time of economic crisis.

The process-related invention in *Diehr*, which was directed to an industrial process that employed a digital computer, is unlike today's information technology, which often relies upon nothing more than the Internet and networked communications. Innovative advances in software, distributed health care information systems, online communities and virtual worlds, social networking, communications systems, massively multiplayer online gaming, enterprise application development, software testing tools, quality assurance applications, and many others will fall victim to exclusion if the Federal Circuit's holding is affirmed leading to substantial, detrimental outcomes for Borland and the U.S.

software industry, including discouraging investment, fostering piracy, and the loss of its leadership position in the worldwide software industry, none of which can be afforded in a time of global economic crisis and ongoing geopolitical concerns.

CONCLUSION

Based on the foregoing reasons, this *Amicus Curiae* respectfully requests that the Court order the judgment of the court of appeals reversed.

Very respectfully,

Scott S. Kokka*
KOKKA & BACKUS, PC
200 Page Mill Road, Suite 103
Palo Alto, CA 94306
(650) 566-9912

Kenneth R. Backus, Jr.
KOKKA & BACKUS, PC
200 Page Mill Road, Suite 103
Palo Alto, CA 94306
(650) 566-9912

*Counsel of Record
Counsel for *Amicus Curiae*,
Borland Software Corporation

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BRIEF

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v.
JOHN DOLL, Acting Under Secretary of Commerce
for Intellectual Property and Acting Director,
Patent and Trademark Office,
Respondent.

On Writ of Certiorari to the
United States Court of Appeals for the Federal Circuit

BRIEF OF AMICUS CURIAE BOSTON PATENT LAW ASSOCIATION IN SUPPORT OF PETITIONERS

Steven J. Henry
Ilan N. Barzilay
Wolf, Greenfield
and Sacks, P.C.
600 Atlantic Avenue
Boston, MA 02210
(617) 646-8000

Joel R. Leeman
Counsel of Record
John J. Stickevers
Jakub M. Michna
Sunstein Kann Murphy
& Timbers LLP
125 Summer Street
Boston, MA 02110
(617) 443-9292

Counsel for Amicus Curiae
Boston Patent Law Association

224382

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INTEREST OF AMICUS CURIAE[1]

The Boston Patent Law Association (BPLA) is an intellectual property association that provides educational programs and a forum for the interchange of ideas and information concerning patent, trademark, copyright, and other intellectual property rights. The Association's members serve a broad range of parties who rely upon the patent system: independent inventors, businesses of all sizes, the investment banking and venture capital communities, universities, research hospitals and other non-profit institutions.

The BPLA desires a reliable patent system that fulfills its constitutional role of promoting the progress of the useful arts. It views the decision below as a threat to that role, because it injects instability into the system and quashes critical incentives for innovation, to the detriment of the American economy.

The BPLA takes no position on the eligibility of petitioners' claimed invention for a patent, but urges that this Court vacate the judgment below, and restore a proper rule of patent-eligibility against which petitioners' invention, and other method inventions, can be fairly measured.

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1. No counsel for a party authored this brief in whole or in part, and no such counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. This brief was authored in its entirety by amicus and its counsel. No monetary contribution toward the preparation or submission of this brief was made by any person other than amicus, its members and its counsel. Petitioners and respondent have indicated their consent to the filing of this brief by filing letters with the Clerk of the Court.

SUMMARY OF THE ARGUMENT

The imposition of a machine-or-transformation test on method inventions ruptures the well-founded expectations of inventors, practitioners and investors as to the broad statutory eligibility for patent protection of "any new and useful process." No less significant, the test conflicts with this Court's precedent.

Congress enacted an inclusive test for patent eligibility, recognizing that paradigm-changing inventions come in unpredictable forms and often push existing frontiers. This Court has made similar observations.

As patents are essential for attracting investments in ideas, a narrow test will impede the commercialization of many inventions, especially in such critical areas of our information-based economy as computer software, business methods and medical diagnostics. The resulting harm will likely fall disproportionately on small businesses, discourage investment in them, and inhibit the introduction of useful products and services to the public.

Indeed, it is plain that many celebrated innovations of the past that truly reshaped our world would have been denied full patent protection under the machine-or-transformation test. Where the invention is embodied as a method or a process, an apparatus or system claim does not provide adequate protection. The danger is that method inventions of equal scientific and creative eminence, that may be claimed in pending and future applications, will be rejected for form rather than substance.

The Court should reject the Federal Circuit's machine-or-transformation test, declare that this Court's precedent requires only that a method claim define a new and useful invention (rather than an abstraction) to be patent-eligible subject matter, and remand for application of that rule to the claims at issue. Alternatively, if the Court believes that remand is unnecessary and that Bilski's claims define only a patent-ineligible mental process or fundamental idea—*e.g.*, an abstraction such as the concept of hedging risk, lacking adequate limitation to a specific application—it should strike those claims on that ground while still rejecting the inflexible test enunciated by the Federal Circuit.[2]

ARGUMENT

I. A Patent System that Protects Innovation in All Areas of Technology Preserves the Health of the American Economy.

As the United States has evolved from an agricultural to an industrial economy, and now to an information-based economy, innovation has become increasingly critical to its success.

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[2] As discussed below, Sections 102, 103 and 112 of the Patent Act, when properly administered, provide sufficient safeguards against the granting or enforcement of unmeritorious patent claims. Section 101 was not intended to take their place. Thus, the distinction between the useful and the abstract has historically been applied sparingly, and this Court should continue to require that only over-reaching attempts to protect scientific principles and laws of nature, devoid of application to a particular use, be considered abstractions that are not patent-eligible.

Traditionally our patent system has protected innovation in industrial disciplines such as chemistry, mechanics and electronics. In recent decades, however, technological breakthroughs have come more and more in fields, such as software, medical diagnostics and finance, where invention is directed to a method[3] rather than a product or apparatus.

Our information-based economy is sustained primarily by small businesses, proven generators of technological innovation. According to the Small Business Administration, independent businesses having fewer than 500 employees "represent more than 99 percent of American companies, create 60 to 80 percent of net new jobs, employ half of the U.S. private work force, and generate half of the private gross domestic product."[4]

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[3] The focus of the decision below was the patent-eligibility of inventions expressed as methods or processes. The drafter of a patent application frequently has available a range of claim types that can define the invention. However, some inventions cannot be adequately protected except by method claims. Such claims are uniquely important to protect broad ideas, where restricting them to particular implementations slights the creative contribution. Consider, for example, a method of communicating wirelessly by generating a radio wave at a selected frequency and varying some property of that wave in accordance with information to be transmitted. The true scope of the invention cannot be protected by defining the tubes, transistors and circuits for one, two or several embodiments of apparatus that can be employed, as there will always be another embodiment that can be conjured up to avoid infringement of apparatus claims. The inventive concept lies in the methodology, and method claims are needed to protect it.

[4] U.S. SMALL BUSINESS ADMINISTRATION OFFICE OF ADVOCACY, THE OFFICE OF ADVOCACY: THE VOICE FOR SMALL

(Cont'd)

Although large businesses obtain a majority of patents in this country, small businesses receive 13 to 14 times more patents per employee than their large counterparts.[5] The most telling statistic, perhaps, is that a patent from a small business is more than twice as likely to be found among the top one percent of most cited patents than is a patent from a large business. In other words, small businesses are far more likely than their larger counterparts to generate patents with the broadest and most technically important contributions:

> Small firm patents outperform large firm patents on a number of impact metrics including growth, citation impact, patent originality, and patent generality. These metrics have been used for decades to measure the innovativeness of firms, labs, and agencies. The metrics have been validated and shown to correlate with increases in sales,

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(Cont'd)

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[5] CHI RESEARCH, INC., SMALL SERIAL INNOVATORS: THE SMALL FIRM CONTRIBUTION TO TECHNICAL CHANGE, SMALL BUSINESS ADMINISTRATION (2003), *available at* www.sba.gov/advo/research/rs225tot.pdf; *see also* ANTHONY BREITZMAN & DIANA HICKS, AN ANALYSIS OF SMALL BUSINESS PATENTS BY INDUSTRY AND FIRM SIZE (2008), *available at* http://www.sba.gov/advo/research/rs335tot.pdf; Derek Leebaert, *How Small Businesses Contribute to U.S. Economic Expansion*, ECON. PERSP., Jan. 2006, at 3, *available at http://www.america.gov/media/pdf/ejs/ 0106.pdf*.

> profits, stock prices, inventor awards, and other positive outcomes. *This suggests that the patents of small firms in general are likely to be more technologically important than those of large firms.*[6]

Small businesses, moreover, are far more likely than big businesses to rely on patents to protect their business methods.[7]

The patent is a small business's *sine qua non* for the commercialization and protection of new inventions. It is the indispensable magnet for investors.[8] The patent is also the only shield that a small business can use to ward off an often larger competitor who would otherwise copy its inventions.[9] Instead, because of the patent shield, the competitor is thereby itself compelled to innovate and compete fairly with the small business.

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[6] BREITZMAN & HICKS, *supra*, at iii (emphasis added).

[7] Small businesses own 19.4 % of all internet business method patents, but own only 10.7 % of all patents. John R. Allison & Emerson H. Tiller, *Internet Business Method Patents*, *in* PATENTS IN THE KNOWLEDGE-BASED ECONOMY 259 (Wesley M. Cohen & Stephen A. Merrill eds., 2003), *available at* http://www.nap.edu/catalog/10770.html.

[8] *See, e.g.*, Ronald J. Mann, *The Role of Patents in Venture-Backed Software Start-Ups*, ACAD. ADVISORY COUNCIL BULL., Apr. 2007, at 1, 5, *available at* http://www.pff.org/issues-pubs/ip/bulletins/bulletin2.1softwareventurepatents.pdf (explaining that patents play a "role of considerable importance" for investments in software-based start-up companies).

[9] *See id.*

This distinctive attribute of patents has long been extolled:

> But if we never needed, or do not now need, patents as bait for inventors, we may still need them, in some instances, as a lure to investors. . . . [I]ndustrial history discloses that [giant] corporations, at times and to some extent, have been prodded into undertaking such research and into developing improvements because of the threat of competition from occasional "outsiders," armed with patent monopolies, and supplied with funds by a few private enterprisers. Thus, paradoxically, monopoly may evoke competition: The threat from patent monopolies in the hands of such "outsiders" may create a sort of competition—a David versus Goliath competition—which reduces the inertia of some huge industrial aggregations that might otherwise be sluggish.

Picard v. United Aircraft Corp., 128 F.2d 632, 642-43 (2d Cir. 1942) (Frank, J., concurring). This competitive tension between small businesses with patents and large businesses with market power engenders innovations that might otherwise have never come into being.

When patent rights are diminished, these systemic benefits are eroded. The lower court's new rule has already been widely cited to exclude from patent eligibility innovative methods that would previously have been protected. If patentees and investors doubt that the patent laws protect the fruit of their efforts, which increasingly take the form of method inventions, then why labor or invest at all? If a giant corporation knows that patent rights are unavailable or offer only narrow protection, why respect the ownership claim of a smaller competitor? Robust patent protection of information-based technologies is essential to maintaining the innovation engine that is American small business.

II. The Machine-or-Transformation Test Calls the Patentability of Many Landmark Inventions Into Question.

The Federal Circuit has imposed an arbitrarily rigid test that conflicts with Congressional intent, this Court's precedent, and the settled expectations of the creative and investment communities. In re *Bilski*, 545 F.3d 943, 954 (Fed. Cir. 2008) (adopting the machine-or-transformation test). This test subverts scientific and economic incentives.

Innumerable inventions over the decades have been protected by method claims that are neither apparatus-tied nor transformation-reciting. Some were pivotal discoveries of far-reaching economic and social consequence. Had the Federal Circuit's "machine-or-transformation" requirement prevailed at the time, these inventions would likely not have earned patent protection and their proven capacity to beneficially shape our world would likely not have been realized.

Such effects may not have been intended by the Federal Circuit, but they are the ineluctable result of the machine-or-transformation test.[10] The following are examples of issued but expired patents for momentous inventions that, experience and common sense dictate, should be eligible for patent protection.

Few would expect that foundational inventions in FM radio would fall outside the patent system. Yet, consider U.S. Patent No. 1,342,885, granted to Edwin Armstrong, the so-called father of FM radio, for inventing a process which was rapidly adopted in nearly all radio communication, and remains to this day a standard approach used in radios, TVs, cell phones and other wireless devices. It involves converting, or shifting, the received radio signal from its broadcast frequency to a lower, so-called "intermediate" frequency for processing. This dramatically reduces the cost of receivers, and simplifies receiver design. Claim 1 of the Armstrong patent reads:

> 1. The method of amplifying and receiving high frequency electrical oscillatory energy which comprises, combining the incoming energy with locally generated high frequency continuous oscillations of a frequency differing from said incoming energy by a third readily-amplifiable high frequency, converting the combined energy by suitable means to produce said readily-amplifiable high frequency oscillations, amplifying the third said high frequency oscillations, and detecting and indicating the resulting amplified oscillations.

---

[10] We note in Section III below some of the untoward results of decisions which rely on *Bilski*'s narrow view of patent eligibility.

Claim 1 does not recite a machine or apparatus and therefore does not meet the machine prong of the test. The claim involves a series of "combining," "amplifying" and "converting" steps. But these steps are performed on "energy" (*i.e.*, a signal), and therefore this claim would ill-qualify for protection under the transformation prong of the test because no "article" is transformed. *See In re Nuijten*, 500 F.3d 1346, 1356 (Fed. Cir. 2007) (holding that signals are transitory and intangible, and therefore do not qualify as "manufactures" or "articles"). Yet it is clear that the claim is directed to the operations of a radio receiver—an invention made by man—and, as such, would conventionally be understood to be eligible for patent protection.[11]

The vast field of information and signal processing extends, of course, beyond radio, to such diverse areas of endeavor as television, the Internet, computing, control systems, image processing and medical imaging, not to mention kitchen appliances, automobiles and countless other devices.

---

[11] Similarly, claim 2 of U.S. Patent No. 4,200,770 to Martin Hellman, et al., for "Cryptographic Apparatus and Method" and claim 5 of U.S. Patent No. 3,959,770, to Louis Schaefer for a "Method and Apparatus for Error Compensation in Multichannel Systems" would fail the present *Bilski* test. The Hellman patent covers the so-called public key encryption system, an invention of immense significance to the world of data communication, effectively making possible secure communications for modern e-commerce and other types of transactions. While a transformation of data arguably occurs, that data could as easily represent English language text as a voltage measured in a circuit. Hence, the transformation appears not to satisfy the *Bilski* criterion. The Schaefer patent is directed to a system for detecting and compensating for errors introduced by imperfect transmission channels. Without error-correction techniques, there could be little useful digital information transmission.

While the underlying "hardware" will embody some of the advances achieved in these areas, often it is a "method" where an invention resides: whether a way to send more information over a given bandwidth (*e.g.*, more channels on a TV cable or fiber); a more efficient means to store data; or a process for transmitting information securely. The invention in these instances is not in the machine but in the process or algorithm[12] followed by the machine. Obtaining patent coverage only for the hardware embodiments of inventions like these, but not for the process itself, often fails to protect the inventions adequately. To establish that certain parties are direct infringers, method claims are required.

A more modern example than FM radio comes from the world of wireless communications. Qualcomm's U.S. Patent No. 4,901,307, issued in 1990, discloses the CDMA (carrier-division, multiple access) technology that is at the heart of the dominant cell phone transmission standard in use in this country. While much of the claim set is devoted to apparatus claims, there is also a significant group of method claims, beginning at claim 33:

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[12] This use of the term "algorithm" is distinct from its use in prior decisions of this Court, where it refers to *mathematical* algorithms. *See Gottschalk v. Benson*, 409 U.S. 63, 65 (1972). When referring to algorithms that are ineligible because they define pure, unapplied, mathematical procedures, we would suggest use of the adjective "mathematical" inasmuch as the general use of the term "algorithm" refers to a series of steps, not necessarily mathematical steps.

> 33. In a spread spectrum multiple access communication system . . . a method for providing high system user capacity . . . comprising the steps of:
>
> *providing* a plurality of system user addressable narrow band information *signals*;
>
> *converting* said plurality of system user addressable narrow band information *signals* into . . . wide band code-division-spread-spectrum communication signals;
>
> *transmitting* said plurality of code-division-spread-spectrum communication *signals* between system users;
>
> *receiving*, at each respective system user, . . . code-division-spread-spectrum communication *signals* . . . ;
>
> *providing* for each respective system user an increase in system user realized average *signal power* . . . ; and
>
> *converting*, at each respective system user, received address corresponding code-division-spread-spectrum communication signals into corresponding user addressable information *signals*.

(emphasis added).

Manifestly, this claim does not recite steps that are tied to a specific machine or apparatus. As in the FM radio patent, this claim requires the manipulation of signals. But signals are not articles, *see Nuijten*, 500 F.3d at 1356, and the plain language of the machine-or-transformation test would place in doubt the patent-eligibility of this claim. Over the past decade, CDMA technology has been one of the backbones of the cellular communications industry. The fact that such technology could now be ineligible is a telling indictment of the *Bilski* test's incapacity to accommodate emerging innovations.

Inventions in the fields of medical diagnostics and treatments will also be thwarted by the machine-or-transformation requirement. One such example is U.S. Patent No. 4,459,286, titled "Coupled Haemophilus Influenzae Type B Vaccine." The inventor, Maurice Ralph Hilleman, is hailed as the most prolific vaccine scientist of the twentieth century by the National Inventors Hall of Fame. He was singled out for "saving more lives than any other scientist" and was inducted into that prestigious body in 2007 with a citation to the '286 patent.[13]

Claim 6 of that patent reads:

> 6. A method of treating mammalian species which comprises administering to said species an immunologically effective amount of a composition comprising a polysaccharide/protein conjugate which comprises H. influenza type b polysaccharide and a T-cell-stimulating N. meningitidis serotype outer membrane protein, said polysaccharide and protein being coupled through 6-aminocaproic acid, and a member of the group consisting of a

---

[13] Invent.org, Hall of Fame, Maurice Ralph Hilleman, http://www.invent.org/hall_of_fame/339.html (last visited Aug. 4, 2009).

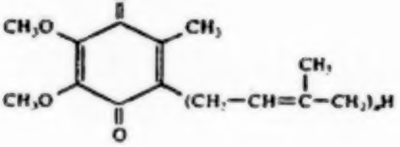
> pharmaceutically-acceptable carrier, an adjuvant, and a pharmaceutically-acceptable carrier and adjuvant.

This claim does not, within its bounds, recite the performance of any type of transformation. It simply requires "administering" a composition. There may be a transformation that results, in the animal subject receiving the treatment, but such transformation does not occur in the claimed method *per se*, as a result of which the "post-facto" activity does not fall within the Federal Circuit's test. Furthermore, there is no machine or apparatus in this claim. A polysaccharide/protein conjugate is a composition of matter or a manufacture, but it is not a machine or apparatus. Accordingly, this famed invention—and numerous others that have been claimed in analogous fashion—is also vulnerable to attack under the new test.[14]

---

[14] Also susceptible is claim 1 of U.S. Patent No. 4,068,003, which is typical of many patents that claim methods of treatment of disease using previously existing compounds (which may or may not be patented in their own right). Claim 1 recites:

> 1. A method for the treatment of myasthenia which comprises administering to a human suffering from myasthenia a therapeutically effective amount of Coenzyme Q having the formula:



wherein n is an integer from 7 to 10.

The impact of the machine-or-transformation test on drug development and *in vitro* diagnostics (*i.e.*, laboratory testing) can only be detrimental. Patent protection for new tests, new drugs and new uses of known drugs (whether or not already approved for a primary use) is needed in many instances to justify the outsize expenses and risk in the process of conducting clinical trials and securing FDA approval. There is no indication the Federal Circuit contemplated this consequence.

These examples show that numerous claims associated with epochal inventions would not have satisfied either prong of the machine-or-transformation test—thus demonstrating this Court's wisdom in not making such a test the measure of patent-eligibility and the Federal Circuit's clear error in doing so.

III. The Lower Court's Ruling Has Already Sown Doubt and Inconsistency As to What Methods are Patent Eligible.

The Patent and Trademark Office's own appellate tribunal, the Board of Patent Appeals and Interferences, cannot figure out how to construe the machine-or-transformation test. Contradictory and arbitrary decisions are issuing from that body already. In one case, the Board decided that a "computerized method performed by a data processor" was not eligible because the data processor was "nothing more than a general purpose computer," which does not qualify as "a *particular* machine or apparatus" under the Federal Circuit's test. *See Ex parte Gutta*, No. 2008-3000, 2009 WL 112393 (B.P.A.I. Jan. 15, 2009). By this reasoning, computer-implemented inventions are singled out for exclusionary treatment, ignoring the central role of computers in modern technology.[15]

Surprisingly, the implications of the machine-or-transformation test extend to statutory classes of inventions other than methods, such as machines, articles of manufacture and chemical compositions, even though this Court has never applied either prong of the test to any other statutory class. For example, one panel of the Board, in another post-*Bilski* case, upheld a computer program product claim as patent-eligible because "[i]t has been the practice for a number of years that a [claim] of this nature be considered statutory at the USPTO as a product claim." *Ex parte Bo Li*, No. 2008-1213, 2008 WL 4828137, at *5 (B.P.A.I. Nov. 6, 2008). Yet another panel disallowed a computer-program product claim because the machine-or-transformation test purportedly necessitated the rejection. *See Ex parte Cornea-Hasegan*, No. 2008-4742, 2009 WL 86725 (B.P.A.I. Jan. 13, 2009).

In one of several post-*Bilski* federal court decisions, the Northern District of California likewise held that *Bilski* required the rejection of a method claim for verifying the validity of a credit card transaction over the Internet. *See CyberSource Corp. v. Retail Decisions, Inc.*, No. 04-03268, 2009 U.S. Dist. LEXIS 26056 (N.D. Cal., Mar. 27, 2009). The *CyberSource* judge observed that, absent intervention by this Court, "[t]he closing bell may be ringing for business method patents, and their patentees may find they have become bagholders." *Id.* at *34.

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[15] The Federal Circuit had sought to leave for another day what a "particular" machine or apparatus is, and what constitutes a requisite "tie." In the meantime, however, Patent Examiners are making up the rules as they go. The same goes for some district court judges. *See, e.g.*, *DealerTrack, Inc. v. Huber*, No. 06-2335, 2009 WL 2020761, at *3-4 (C.D. Cal. July 7, 2009) (observing that the Federal Circuit did not apply its own test to the facts of *Bilski* and relying on Board of Patent Appeals and Interferences decisions to clarify the test).

The Eastern District of Texas, by contrast, took a more cautious approach in *Versata Software, Inc. v. Sun Microsystems, Inc.*, No. 06-358, 2009 WL 1084412 (E.D. Tex. Mar. 31, 2009), and denied a motion for judgment on the pleadings, holding that its "interpretation of *Bilski* is not so broad [as defendant argued]." *Id.* at *1. The court explained that the Federal Circuit declined to adopt a broad exclusion over software or any other such category of subject matter beyond the exclusion of claims drawn to fundamental principles and noted that the process claim at issue is not, in any event, a software claim. *See id.*

These helter-skelter rulings disrupt settled expectations built upon the Federal Circuit's *en banc* opinion of fifteen years ago that a programmed general purpose computer is patent-eligible because it "in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software." In re *Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994) (*en banc*). The Federal Circuit's machine-or-transformation test now heaps doubt on years' worth of applications and patents on computer-implemented inventions.[16] Decision-makers in the Patent and Trademark Office and even the district courts believe that *Bilski* overruled the *Alappat* decision, although the Federal Circuit said no such thing.

IV. This Court Has Recognized That Section 101 Broadly Defines Patent-Eligible Subject Matter, Which is Not Subject to a Narrow or Rigid Test.

Section 101 of the Patent Act defines the boundaries of patent eligibility as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. § 101. The language of the statute is broad, covering *any* new and useful process, as this Court has consistently recognized. The only so-called exception—that natural phenomena or abstract ideas are ineligible—is but a recognition that scientific principles are not "new and useful" when they "reveal[] a relationship that has always existed." *Parker v. Flook*,

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[16] Prior to the *Bilski* decision, the USPTO had given clear guidance to its examiners as to the kinds of claims for computer-implemented inventions that it understood to pass muster under Section 101. *See* Examination Guidelines for Computer-Related Inventions, 61 Fed. Reg. 7478, 7481-86 (Feb. 28, 1996). Now, its Board is struggling to find a consistent reading of the Federal Circuit decision. That struggle exposes how problematic the decision is.

437 U.S. 584, 593 n.15 (1978). This Court has never replaced the broad text of Section 101 with a narrow or rigid test for eligibility, and it should not do so here.

Reviewing the many so-called "bad" patents issued by the Patent and Trademark Office, one may doubt whether broad eligibility best achieves the innovation-promoting goals of the patent system.[17] But Section 101 addresses only whether a process is eligible subject matter for a patent; the process must also satisfy other statutory requirements such as novelty and nonobviousness to be patentable. Particularly in light of this Court's reaffirmation of a broad and flexible test for obviousness in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), many previously-granted "bad" patents may be invalidated under Section 103.

The PTO's allowance rate has already plummeted without resort to a narrowing construction of Section 101. Furthermore, if Section 101 is problematic in its unambiguous breadth, this Court has recognized that Congress is the competent and constitutionally appropriate institution to address such policy concerns.

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[17] Many criticisms of business method patents focus on perceived differences between them and other patents issued by the PTO, and harbor a fallacious assumption that business method patents are "weaker" or "less valuable" than other patents. In a statistical sampling, Internet business method patents cited a mean of 23 prior art references whereas all other patents cited only 15 prior art references. This statistic suggests that Internet business method patents are examined in view of more prior art references and therefore undergo more scrutiny than other patents. Thus, the casual claim that business methods make "bad" patents is unsupported by the numbers. *See* Allison & Tiller, *supra*, at 268.

A. The machine-or-transformation test is inconsistent with the text of the statute as interpreted by this Court.

Under Section 101, "any new and useful process" is eligible for patent protection, so long as it satisfies the additional statutory requirements of patentability such as novelty and nonobviousness. Recognizing the breadth of patent-eligible subject matter, this Court has explained that Congress "plainly contemplated that the patent laws would be given wide scope." *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980); *see also id.* at 309 (noting that "Congress intended statutory subject matter to 'include anything under the sun that is made by man'").

The text of the statute is clear, and nothing in Section 101 or this Court's precedent suggests that a process may be "new and useful" only if it "is tied to a particular machine or apparatus" or "transforms a particular article into a different state or thing." *Bilski*, 545 F.3d at 954. Indeed, the machine-or-transformation test is a narrowing departure from Section 101's permissive definition of patent-eligible subject matter, and the Federal Circuit has thereby turned the law upside down, making touchstones of eligibility into requirements.

Laws of nature, natural phenomena, and abstract ideas (*e.g.*, in the guise of mathematical algorithms) are not eligible under Section 101. *Diamond v. Diehr*, 450 U.S. 175, 185 (1981). They are excluded because scientific truths are not new and useful—they have "always existed," waiting to be discovered, and should be free for all to use. *Flook*, 437 U.S. at 593 n.15. This

Court has never held that Section 101 requires a narrower test than is prescribed by its text: If a process is new and useful, it is eligible subject matter. But if instead a process defines a law of nature, which has always existed but has only recently been discovered, it is not eligible. Only a useful *application* of a law of nature is eligible.

The court below mistook a *sufficient* condition for eligibility under Section 101 to be a *necessary* one. *Gottschalk v. Benson*, 409 U.S. 63 (1972), on which the Federal Circuit primarily relied, stands only for the familiar principle that "one may not patent an idea." *Id.* at 71 (explaining its holding "in a nutshell"). Yes, the *Benson* Court invoked the machine-or-transformation test, but it did so only to provide "the clue" to eligibility *in that case*, that is, a sufficient condition, not a necessary condition in all cases. *See id.* at 70.

The Court's more recent decision in *Diehr* resolves all doubt on this score. *Diehr* explains that *Benson* "stand[s] for no more than these long-established principles," that "laws of nature, natural phenomena, and abstract ideas" are unpatentable. *Diehr*, 450 U.S. at 185. Indeed, the *Benson* Court itself rejected the notion that the machine-or-transformation test is essential to the Section 101 inquiry. 409 U.S. at 71 (dismissing the argument that "a process patent must be either tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing'").

This Court's recent decisions in the patent domain confirm that the capacious criteria for patent eligibility are not to be replaced with formulaic tests, even if doing so would, in the eyes of some, improve the patent system. Thus, the *KSR* Court rejected the Federal Circuit's "rigid approach" to obviousness under the teaching, suggestion, or motivation (TSM) test in favor of a "functional approach" that better fit the open-ended terms of the statute. *KSR*, 550 U.S. at 415. The TSM test and the machine-or-transformation test are the product of honorable efforts to understand and apply key terms in the Patent Act, but they share the flaw of instituting the type of "rigid and mandatory formulas" that this Court disfavors. *Id.* at 419. This Court has consistently disallowed tests that reduce broad or flexible patent doctrines to such rigid formulas. *See, e.g.*, *MedImmune, Inc. v. Genentech, Inc.*, 549 U.S. 118, 132 n.11 (2007) (rejecting the "reasonable apprehension of suit" test in favor a less rigid, traditional approach to declaratory judgment jurisdiction); *eBay Inc. v. MercExchange, LLC*, 547 U.S. 388 (2006) (rejecting an automatic grant of injunctive relief in favor of traditional equitable balancing).

Even the court below recognized that the rigid machine-or-transformation test might not adapt well to changing technology. *Bilski*, 545 F.3d at 956. But rather than retreat from its test, the Federal Circuit explained that "the Supreme Court may ultimately decide to alter or perhaps even set aside this test to accommodate emerging technologies." *Id.* In other words, the Federal Circuit not only recognizes that its rigid test is not required by the statutory language—since the test may admittedly be set aside—but envisions that this Court will "update" the statute's meaning to best effectuate the purposes of the Patent Act over time. Such updating is not within the judicial role, and indeed, this Court has not strayed from its consistent interpretation of Section 101's text. The test for eligibility is broad, but also simple: Any new and useful process is patent-eligible subject matter.

B. If Section 101's broad provision of eligibility leads to bad patents, Congress, not the courts, should amend the statute.

Many in the media and academia have argued that the patent system is broken because the PTO has issued patents on how to dust a room, use a laser pointer to play with a cat, or the like. But for at least two reasons, this Court should not respond to the system's perceived shortcomings (which have little, if anything, to do with the subject-matter eligibility question) by imposing a rigid test for patent-eligible subject matter.

First, Section 101 addresses only eligibility, and the Patent Act includes several other requirements of patentability that can filter out "bad" patents. For example, inventions must be novel and nonobvious to warrant patent protection. *See* 35 U.S.C. §§ 102, 103; *see also Diehr*, 450 U.S. at 190 ("The question therefore of whether a particular invention is novel [or nonobvious] is 'wholly apart from whether the invention falls into a category of statutory subject matter.'"). This Court's recent decision in *KSR* elevates the nonobviousness requirement to a broader, more flexible form, and *KSR* may prove to be an invaluable tool for separating the wheat from the chaff. There is no need to "fix" the patent system by stretching the meaning of an unambiguous text to create an unnecessary filter.

Second, as this Court has recognized, it is Congress's role to remedy any deficiencies in Section 101.[18] *See Chakrabarty*, 447 U.S. at 317

> [W]e are without competence to entertain these arguments [concerning the hazards of a broad reading of Section 101]. . . . The choice we are urged to make is a matter of high policy for resolution within the legislative process after the kind of investigation, examination, and study that legislative bodies can provide and courts cannot.

Flook, 437 U.S. at 595 ("Difficult questions of policy concerning the kinds of [computer] programs that may be appropriate for patent protection and the form and duration of such protection can be answered by Congress on the basis of current empirical data not equally available to this tribunal."). Because the machine-or-transformation test departs from the unambiguous text of the statute and governing precedent, this Court should not follow the Federal Circuit's narrowing approach even if it harbors doubts about the expansiveness of Section 101 as written.

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[18] The existence of "business method" patents has not escaped congressional notice. Indeed, in response to *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), and its progeny, Congress amended the Patent Act to address questions relating to business method patents. *See, e.g.*, 35 U.S.C. § 273(a)(3). Despite the existence of such patents (and calls for their extinction) for over a decade, Congress has repeatedly—and, we submit, wisely—declined to revisit the scope of patentable subject matter.

C. The patent eligibility of petitioners' claims turns on whether the abstract concept of hedging is applied to a particular use.

Managing risk in commercial transactions appears to be "useful" in the abstract. To be deemed useful under Section 101, however, claims must not be directed to laws of nature, natural phenomena, or abstract ideas. Thus, one must weigh whether Bilski and Warsaw's claims run afoul of the prohibition on abstract ideas. The BPLA believes this is a close call, not because a risk management method that relies on hedging is automatically abstract under Section 101, but because the specific wording of petitioners' claims may warrant exclusion.

Claim 1 is limited to hedging risk in commodity consumption transactions only in its preamble. The body of the claim does not refer to consumption risk. A preamble term not referenced in the body of the claim typically is not considered limiting. *See, e.g.*, *Schumer v. Lab. Computer Sys., Inc.*, 308 F.3d 1304, 1310 (Fed. Cir. 2002). The claims at issue are therefore arguably directed to an abstract idea divorced from any particular application. If so, such claims do not define statutory subject matter under this Court's precedent, but are a generic statement of the concept of hedging. *See Benson*, 409 U.S. at 67 ("Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work.").

The distinction between ineligible abstract ideas and patent-eligible processes depends on *application*. *See id.* (explaining that eligibility "must come from the application . . . to a new and useful end."). An abstract idea must be applied to a particular use to be patentable, and it is the application, not the idea itself, that may be protected. By contrast, where an applicant seeks to patent the idea itself, he thereby purports to monopolize the concept, unconstrained by a particular application to a new and useful end. Claims that depend on human judgment for their application, or claims directed to an idea that cannot be separated in principle from the steps necessary to implement it, are probable casualties of the bar on patenting abstract ideas.

The claims at issue are susceptible of varied readings and, without the written description and drawings (which are not public information), one could fairly conclude that they define nothing more than the general idea of hedging investments by balancing risk positions. The claims lack instruction as to how to identify participants with a "counter-risk position" or how to "initiat[e] a series of transactions" to balance risk. *See Bilski*, 545 F.3d at 949.

As written (and notwithstanding any concrete embodiments that may have been disclosed and that might have supported narrow, non-preemptive claims), the claimed steps are not concrete steps for a particular application; they require human judgment. They are even more abstract than the algorithm for calculating alarm limits in *Flook*, which was at least directed to the narrower domain of signaling inefficiency or danger in the operation of a catalytic converter. *See Flook*, 437 U.S. at 585.

Because the steps in Bilski and Warsaw's claims could describe any hedging process, they may fairly be seen as attempting to preempt the very concept of hedging. The preamble's reference to the hedging of commodity consumption risk appears to be immaterial to an assessment of what is being claimed.

On the other hand, a specific method for hedging risk, according to a defined process that does not require the exercise of human judgment, could very well be patent eligible, whether or not that method depends on computers or other apparatus. As long as a fundamental principle is not thereby preempted, there is no reason that the invention cannot qualify as a "new and useful process" under Section 101. The eligibility of the hedging method for a patent turns, in the end, on the details of the application's disclosure or the prosecution history, and cannot be determined in a vacuum. The BPLA urges the Court to vacate the lower court's decision and remand for further consideration of Bilski and Warsaw's process under a broad test for subject matter eligibility.

CONCLUSION

For the foregoing reasons, the Court should reject the lower court's machine-or-transformation test and reaffirm that courts must weigh relevant facts to determine if a method claim defines an eligible invention or an ineligible abstraction.

Respectfully submitted,

STEVEN J. HENRY
ILAN N. BARZILAY
WOLF, GREENFIELD
AND SACKS, P.C.
600 Atlantic Avenue
Boston, MA 02210
(617) 646-8000

JOEL R. LEEMAN
Counsel of Record
JOHN J. STICKEVERS
JAKUB M. MICHNA
SUNSTEIN KANN MURPHY
& TIMBERS LLP
125 Summer Street
Boston, MA 02110
(617) 443-9292

Counsel for Amicus Curiae
Boston Patent Law Association

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In the Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF FOR THE BUSINESS SOFTWARE ALLIANCE AS *AMICUS CURIAE* IN SUPPORT OF AFFIRMANCE

ANDREW J. PINCUS
Counsel of Record
DAN HIMMELFARB
BRIAN D. NETTER
Mayer Brown LLP
1909 K Street, NW
Washington, DC 20006
(202) 263-3000

Counsel for Amicus Curiae
Business Software Alliance

WILSON-EPES PRINTING CO., INC. – (202) 789-0096 – WASHINGTON, D. C. 20002

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BRIEF FOR THE BUSINESS SOFTWARE ALLIANCE AS *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY

INTEREST OF *AMICUS CURIAE*

The Business Software Alliance (BSA) is an association of the world's leading software and hardware technology companies. On behalf of its members, BSA promotes policies that foster innovation, growth, and a competitive marketplace for commercial software and related technologies. BSA members pursue patent protection for their intellectual property and as a group hold a significant number of patents. Because patent policy is vitally important to promoting the innovation that has kept the United States at the forefront of software and hardware development, BSA members have a strong stake in the proper functioning of the U.S. patent system.

The members of the BSA are Adobe, Apple, Autodesk, Bentley Systems, CA, Cadence Design Systems, Cisco Systems, Corel, CyberLink, Dell, Embarcadero Technologies, HP, IBM, Intel, Intuit, McAfee, Microsoft, Minitab, Quark, Quest Software, Rosetta Stone, SAP, Siemens, SolidWorks, Sybase, Symantec, Synopsys, and The MathWorks.[1]

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[1] Pursuant to this Court's Rule 37.6, *amicus* affirms that no counsel for a party authored this brief in whole or in part and that no person other than *amicus* and its counsel made a monetary contribution to its preparation or submission. The parties' letters consenting to the filing of this brief have been filed with the Clerk's office.

INTRODUCTION AND SUMMARY OF ARGUMENT

If innovation is the engine of the American economy, then intellectual property is its fuel. From the time of the Founding, it has been understood that, to "promote the progress of * * * useful arts," U.S. CONST. art. I, § 8, cl. 8, economic incentives must be provided to those who develop new inventions.

At one point in the Nation's history, those inventions involved methods for forging iron or harnessing the illuminating capacity of tungsten. Innovation takes more varied forms today. Computers, for example, are an ever-present feature of modern life and modern industry, and they perform a myriad of useful functions through the interaction between hardware and software. Much innovation today arises from the expanded use and sophistication of computers and the software that directs their operations. The Patent Act is not so limited that it impedes the progress of these new technologies. To the contrary, the patent system was developed to foster such innovation.

The importance of technological innovation to the growth of the American economy and the continued success of American industry cannot be overstated. Undue narrowing of the scope of patent protection would produce a concomitant reduction in innovation, with adverse effects on the entire economy. At the same time, an interpretation of patentable subject matter that extends to laws of nature and abstract ideas could deter innovation by blocking development of new technologies.

In interpreting the scope of 35 U.S.C. § 101, this Court should be mindful of its long tradition of vindicating the purposes of the Patent Act. Throughout its history, this Court has been careful to protect avenues for innovation while limiting efforts to claim entire fields of scientific discovery. Those dual guideposts stem directly from Section 101, which authorizes patents for "any new and useful process, machine, manufacture, or composition of matter." This language is broad but not infinite. Likewise, its role is important but not exclusive. The fundamental purpose of Section 101 is to establish the scope of the "useful arts," U.S. CONST. art. I, § 8, cl. 8, not to filter out every unjustified patent claim. An invention that qualifies as patentable subject matter may receive a patent only if in addition it satisfies the requirements of novelty, nonobviousness, and enablement. 35 U.S.C. §§ 102, 103, 112.

Courts have consistently, and correctly, concluded that—except in narrow circumstances—software-implemented inventions satisfy Section 101. That conclusion is legally correct and economically essential, and it should be reaffirmed by this Court. The decision below does not disturb the Federal Circuit's understanding that Section 101 extends to inventions implemented by computer software. However, in adopting its machine-or-transformation test, the Federal Circuit unduly narrowed the scope of patent protection for future technological advances and failed in its effort to bring clarity to Section 101. This Court has never endorsed the machine-or-transformation test as an indispensable criterion for satisfying Section 101. Instead, the proper focus is whether a patent claim would control all applications of a law of nature, a natural phenomenon, or an abstract idea—the fundamental building blocks of innovation that no person has invented and no person should control.

Petitioners' claim fails that test, because they seek a patent that would preempt the entire concept of hedging. Accordingly, the judgment of the Federal Circuit should be affirmed. In reaching the correct result, however, the Federal Circuit employed the wrong standard, introducing inappropriate and unnecessary obstacles that could impede future technological development in new fields of innovation.

The judgment below should therefore be upheld only after this Court removes the Federal Circuit's ill-advised limitations on Section 101. In so doing, the Court should reaffirm that the patent system remains open to critical areas of developing technology such as inventions implemented by computer software.

ARGUMENT

I. SECTION 101 HAS CONSISTENTLY—AND CORRECTLY—BEEN INTERPRETED TO ENCOMPASS SOFTWARE-IMPLEMENTED INVENTIONS.

Software-implemented inventions have had, and continue to have, a profound impact on the American economy. And patent protection is a critical component of the information economy's success. Indeed, both the legal and the economic systems have accepted and relied upon the patentability of machines and processes implemented through software. In assessing the scope of Section 101, therefore, this Court should be mindful of settled expectations and avoid interpreting Section 101 in a manner that would defeat those expectations and undermine a major area of innovation.

A. Patents For Software-Implemented Inventions Provide Important Benefits To The Economy And Society At Large.

Much like the other "useful arts," innovations in software technology bring important advances to the American economy. Computer software is now used not just for word processing and calculating spreadsheets but also for designing bridges, diagnosing diseases, and directing our energy infrastructure. Most of the technologies that we encounter every day—from cellular phones and antilock brakes to airplane flight controls and pacemakers—require computers and software and incorporate technological advancements. The automation of previously manual tasks through computer software has improved quality, consistency, efficiency, and access to a wide variety of products and services, such that the vast majority of patents on software-implemented inventions go to companies in the manufacturing sector. In short, "[t]oday's software transforms our lives without physical anchors." Pet. App. 143a (Rader, J., dissenting).

Investment in software reflects its increasing importance to American industry. In 2000, software represented nearly 15% of non-residential fixed capital investment in the entire economy, up from only 3% in 1980. Organisation for Economic Co-Operation and Development, *Measuring the Information Economy* 11 (2002), http://www.oecd.org/dataoecd/16/14/1835738.pdf. On a broader level, the information technology industry has been described as "the key factor responsible for reversing the 20-year productivity slow-down from the mid-1970s to the mid-1990s and in driving today's robust productivity growth." Pet. App. 94a (Newman, J., dissenting) (quoting Robert D. Atkinson & Andrew S. McKay, *Digital Prosperity: Understanding the Economic Benefits of the Information Technology Revolution* 10 (Info. Tech. & Innovation Found. 2007), http://www.itif.org/files/digital_prosperity.pdf).

Industry estimates suggest that 20,000 new patent applications for software-implemented inventions are granted each year, James E. Bessen & Robert M. Hunt, *An Empirical Look at Software Patents*, 16 J. ECON. & MGMT. STRATEGY 157, 158 (2007). "[B]oth economic theory and practical experience suggest that the availability of patents for software promotes innovation by supplying (additional) incentives to inventors." Julie E. Cohen & Mark A. Lemley, *Patent Scope and Innovation in the Software Industry*, 89 CAL. L. REV. 1, 5 (2001).

BSA member companies exemplify the principle that patent protection creates an environment conducive to the pursuit of innovation—each year, they spend in excess of $32 billion on research and development to expand their innovation portfolios. See BSA, *Patent Reform: The Verdict Is In* 4 (2007), http://www.bsa.org/~/media/63E3364BBA7148828D2 CE880AF5371D2.ashx. For example, these companies are pursuing breakthroughs that will provide doctors with access to "previously unimaginable amounts of clinical data" through advances in cloud computing, help water supply networks to identify the leaks in their infrastructure that result in the loss of 26% of treated water, and allow printers to generate three-dimensional objects. BSA, *Innovation Nation*, SOLUTIONS MAGAZINE, June 2009, at 3, 4, 7, http://www.bsa.org/country/Public%20Policy/~/media /Files/Policy/Solutions/Solutions_Magazine_1.ashx.

None of these pursuits would be possible without software.

As early as 1992, congressional reports recognized that "patent protection is of importance to the U.S. software industry, both domestically and in the global market." U.S. Congress, Office of Technology Assessment, *Finding a Balance: Computer Software, Intellectual Property and the Challenge of Technological Change* 23 (1992). Without intellectual property protection, prospective software entrepreneurs face serious risks that competitors will free-ride on their innovations by pilfering the essential elements of a software program. See, *e.g.*, Bradford L. Smith & Susan O. Mann, *Innovation and Intellectual Property in the Software Industry: An Emerging Role for Patents?*, 71 U. CHI. L. REV. 241, 241–242 (2004). This free-riding comes at the expense of the inventor's return on his investment. Conversely, with proper protection, potential innovators are motivated to pursue new inventions and to proceed to commercial development to collect their economic rewards. *Id.* at 256–257; see also Erik S. Maurer, Note, *An Economic Justification for a Broad Interpretation of Patentable Subject Matter*, 95 NW. U. L. REV. 1057, 1087–1088 (2001).[2]

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[2] Software entrepreneurs are also harmed when identical copies of finished programs are duplicated in what, under the current intellectual property regime, constitutes illegal piracy. Piracy is sometimes combated through the Copyright Act, which protects "the author's original expression of an idea." Smith & Mann, *supra*, at 256. However, copyright law does not prevent a competitor from extracting the innovative elements of software and incorporating them into a new creative shell. Patent protection is necessary for an inventor to "protect the actual invention, not just a single implementation of it." *Ibid.*

Simple economics suggests that, if patent protection for software were curtailed, the adverse consequences would be swift and severe. With less profit to capture from the commercialization of the fruits of research and development, businesses would divert their resources into other ventures, and software development would suffer. That would have a ripple effect on economic productivity. Advanced software allows factory workers to be more precise, cars more fuel efficient, and healthcare more effective. Any new obstacles to software development would carry a penalizing multiplier effect that could threaten the continued technological advantage of the United States.

B. This Court Should Not Interpret Section 101 In A Manner That Upsets Settled Expectations And Has Harmful Economic Consequences.

Because so much has already been invested in computer software, both in resources and in manpower, this Court should be careful not to upset this settled industry of innovators by narrowing Section 101. See, *e.g.*, Cohen & Lemley, *supra*, at 4 ("With some eighty thousand software patents already issued * * * software patentability is a matter for the history books."). This necessity is driven both by the legal imperative of statutory *stare decisis* and by the extra force this doctrine carries in light of the particularly severe costs of upsetting patent expectations.

Stare decisis "promotes the evenhanded, predictable, and consistent development of legal principles, fosters reliance on judicial decisions, and contributes to the actual and perceived integrity of the judicial process." *Payne* v. *Tennessee*, 501 U.S. 808, 827

(1991). Departure from settled precedent always requires "special justification," *Arizona* v. *Rumsey*, 467 U.S. 203, 212 (1984), and "[c]onsiderations in favor of *stare decisis* are at their acme in cases involving property and contract rights, where reliance interests are involved," *Pearson* v. *Callahan*, 129 S. Ct. 808, 816 (2009) (quoting *Payne*, 501 U.S. at 828). Among property rights, intellectual property invites particularly strong reliance. Moreover, "[c]onsiderations of *stare decisis* have special force in the area of statutory interpretation, for here, unlike in the context of constitutional interpretation, the legislative power is implicated, and Congress remains free to alter what [the courts] have done." *Shepard* v. *United States*, 544 U.S. 13, 23 (2005) (quoting *Patterson* v. *McLean Credit Union*, 491 U.S. 164, 172–173 (1989)).

Thus, where decisions interpreting a statute concern a right in intellectual property, *stare decisis* concerns apply with the greatest possible force. This Court has spoken on several occasions about the scope of Section 101. A dramatic change in patent law might invalidate certain patents notwithstanding the fact that—had the law imposed different requirements—claims would have been prosecuted differently, or unappealed rejections might have been pursued. For that reason, this Court has emphasized that "[f]undamental alterations in these rules risk destroying the legitimate expectations of inventors in their property" and that "courts must be cautious before adopting changes that disrupt the settled expectations of the inventing community." *Festo Corp.* v. *Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 739 (2002); see also *Warner-Jenkinson Co.* v. *Hilton Davis Chem. Co.*, 520 U.S. 17, 32 (1997) ("[W]e should be extremely reluctant to upset the basic assumptions of the PTO without substantial reason for doing so.").

II. THE FEDERAL CIRCUIT'S UNDULY NARROW TEST FOR PATENTABLE SUBJECT MATTER IS INCONSISTENT WITH THIS COURT'S PRECEDENTS.

The Federal Circuit correctly recognized that "[t]he true issue" in this case is "whether [Bilski is] seeking to claim a fundamental principle (such as an abstract idea) or a mental process." Pet. App. 8a. Application of this Court's decisions barring patents that claim "laws of nature, natural phenomena, [or] abstract ideas," *Diamond* v. *Diehr*, 450 U.S. 175, 185 (1981), compels rejection of petitioners' claim.

Rather than resting its holding on that ground, however, the court of appeals engaged in an extended discussion of other potential limits on patentability grounded in Section 101. It concluded that this Court's precedents *required* it to adopt the narrow machine-or-transformation test—even though the court of appeals itself recognized that the test may be inadequate to ensure that patent protection is available for new and emerging technologies. Pet. App. 17a. This is contrary to the basic purpose of the Patent Act, which is to promote innovation.

By elevating the machine-or-transformation test from a *sufficient* criterion for satisfying Section 101 into a *necessary* one, the Federal Circuit has unduly narrowed the scope of patentability and threatened future innovation. This Court has enunciated no such "definitive test" and the Federal Circuit's adoption of the machine-or-transformation test as the *exclusive* basis for satisfying Section 101 is not supported by this Court's precedents. To the contrary, this Court has emphasized the breadth of Section 101 and refused to recognize artificial limits on what constitutes a "process," mindful that technologies evolve and that the patent system was designed to be flexible and to accommodate new paths for innovation.

This Court should reject the court of appeals' narrow conception of patentable "process[es]" and reaffirm its prior decisions emphasizing Section 101's role in preventing preemption of "laws of nature, natural phenomena, and abstract ideas." *Diehr,* 450 U.S. at 185. Applying that standard, this Court should nonetheless affirm the Federal Circuit's result, because the disputed patent claim is an attempt to patent a disembodied abstract idea.

A. This Court's Holdings That Patents May Not Encompass "Laws Of Nature, Natural Phenomena, And Abstract Ideas" Dispose Of Petitioners' Claim.

1. *Section 101 defines patentability broadly but precludes patents for scientific principles.*

The scope of patentable subject matter is broad, but it is far from unlimited. Section 101 permits the protection of "any new and useful process, machine, manufacture, or composition of matter." However, as this Court has long recognized, "[a]n idea of itself is not patentable." *Rubber-Tip Pencil Co.* v. *Howard,* 87 U.S. (20 Wall.) 498, 507 (1874). For that reason, "[p]henomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable." *Gottschalk* v. *Benson,* 409 U.S. 63, 67 (1972); accord *Parker* v. *Flook,* 437 U.S. 584, 589 (1978). Patent law does not extend to "the discovery of some of the handiwork of nature," *Funk Bros. Seed Co.* v. *Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948), because laws of nature are "the basic tools of scientific and technological work," *Benson*, 409 U.S. at 67. Thus, no patent could claim Albert Einstein's equation for mass-energy equivalence, $E = mc^2$. *Diamond* v. *Chakrabarty*, 447 U.S. 303, 309 (1980).

The principle that ideas are not patentable, however, does not extend to "the application of [a] law of nature to a new and useful end." *Funk Bros.*, 333 U.S. at 130; see also *Mackay Radio & Tel. Co.* v. *Radio Corp. of Am.*, 306 U.S. 86, 94 (1939) ("While a scientific truth, or the mathematical expression of it, is not a patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be."). In drawing this critical distinction between abstract ideas and their applications, this Court has looked to whether "the patent would wholly pre-empt" the underlying idea, such that it "in practical effect would be a patent on the [idea] itself." *Benson*, 409 U.S. at 72; accord *Diehr*, 450 U.S. at 187. Thus, the critical question is whether other inventors may make use of the fundamental principle in their own specific applications thereof—or, instead, whether the patent claims all such uses.

The non-preemption standard has long formed the foundation of this Court's Section 101 jurisprudence.[3] In *Tilghman* v. *Proctor*, 102 U.S. 707 (1881), the Court examined a patent claiming a novel method for decomposing fats that applied the chemical principle that "the elements of neutral fat [are] require[d] to be severally united with an atomic equivalent of water in order to separate from each other and become free." *Id.* at 729. Tilghman's method involved heating a mixture of fat and water in a vessel strong enough to resist the escape of steam. This Court determined that this process constituted patentable subject matter for two reasons: Tilghman did not claim the chemical principle itself; and the principle was not preempted, because his claim did not cover the other known methods for employing the chemical fact—lime-saponification, sulphuric-acid distillation, and steam distillation. *Ibid.*

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[3] A similar non-preemption principle applies to copyrights. Whereas an "idea" itself is not copyrightable, the particular expression of an idea is. *Harper & Row Publishers, Inc.* v. *Nation Enters.*, 471 U.S. 539, 556–557 (1985); see 17 U.S.C. § 102(b).

Conversely, in *O'Reilly* v. *Morse*, 56 U.S. (15 How.) 62 (1854), the Court examined Samuel Morse's eight claims relating to his electromagnetic telegraph and concluded that the eighth claim was unpatentable. Morse explained that he sought to protect not merely the specific application of direct current that he employed in his telegraph, but any use of electromagnetism for distance transmission "however developed." *Id.* at 86. The Court rejected the eighth claim because Morse had not—and could not have—invented every possible implementation of electromagnetism. *Id.* at 112–113. As the Federal Circuit's predecessor court has explained, "claim 8 was held improper because by disclaiming all apparatus limitations, Morse was attempting to define the limit of his invention in terms of the natural phenomenon of electromagnetism and would, therefore, preempt the use of this phenomenon." *In re Bergy*, 596 F.2d 952, 990 (C.C.P.A. 1979), aff'd sub nom. *Diamond* v. *Chakrabarty*, 447 U.S. 303 (1980).

Recently, in dissenting from the dismissal of certiorari in *Laboratory Corp. of America Holdings* v. *Metabolite Laboratories, Inc.*, 548 U.S. 124 (2006), Justice Breyer (joined by Justices Stevens and Souter) recognized that patents are unavailable for laws of nature, natural phenomena, and abstract ideas. *Id.* at 126–128. In expressing his view of the merits of that case, Justice Breyer applied the non-preemption test to determine that a process for detecting vitamin deficiencies by measuring the level of a correlated amino acid fell outside Section 101. See *id.* at 137–138 ("[O]ne can reduce *any* process to a series of steps. The question is what those steps embody. And here, aside from the unpatented test, they embody only the correlation," which is "an unpatentable 'natural phenomenon.'").

2. *Preemption analysis can be used successfully to screen out non-patentable subject matter.*

Properly applied, the non-preemption standard is an important means for determining whether an inventor claims an abstract idea or an implementation thereof—and therefore whether the subject matter is patentable under Section 101. The Federal Circuit and its predecessor court have employed this standard frequently to disqualify patent claims whose preemptive effect would be equivalent to patenting a natural law.

In *In re Warmerdam*, 33 F.3d 1354 (Fed. Cir. 1994), for example, the court reviewed an application for a method to control the motion of objects to avoid collision with other (fixed or moving) objects. It assessed the interaction between Warmerdam's claim 1 and the Hilditch Skeletonization method for creating a bubble hierarchy on an object's medial axis. See *id.*

at 1359–1360. After concluding that "the only practical[] embodiment of the claimed method" was a replication of the Hilditch Skeletonization method itself, the court correctly determined that Warmerdam's claim 1 "describe[d] nothing more than the manipulation of basic mathematical constructs, the paradigmatic 'abstract idea.'" *Id.* at 1360.

Similarly, in *In re Schrader*, 22 F.3d 290 (Fed. Cir. 1994), the court rejected a claim for a supposedly novel method for conducting auctions, because the patent claimed "two obvious and familiar modes of human behavior: that potential buyers naturally may submit bids on one, some, or all of the items available for sale, and that sellers may naturally choose that combination of bids that maximize their profits." *Id.* at 293 n.8. Exclusive control over modes of human behavior could not be awarded to an enterprising patent applicant.[4]

Consistent with this Court's guidance in *Benson*, the exclusion from Section 101's scope of claims that would preempt a law of nature, natural phenomenon, or abstract idea imposes substantial and important limits on the scope of patentability, guaranteeing that the elemental tools of innovation will not be denied public use.

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[4] The court has reached the same conclusion with respect to other claims. See *In re Grams*, 888 F.2d 835, 840 (Fed. Cir. 1989) (affirming denial of a patent for a method of testing a complex system, because the only difference between the process and the underlying scientific principle was the gathering of data); *In re Meyer*, 688 F.2d 789, 796 (C.C.P.A. 1982) (affirming denial of a patent for a process to identify locations of malfunction in a complex system, because the process was merely a mathematical algorithm to be employed through mental steps); *In re Maucorps*, 609 F.2d 481, 486 (C.C.P.A. 1979) (affirming denial of a patent for a model sales organization, because the "claimed invention as a whole comprises each and every means for carrying out a solution technique for a set of equations wherein one number is computed from a set of numbers").

3. The Bilski patent fails preemption analysis.

Petitioners' application was correctly denied as an attempt to patent an abstract principle.

Claim 1 is directed toward:

> A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:
>
> (a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumers;
>
> (b) identifying market participants for said commodity having a counter-risk position to said consumers, and
>
> (c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions.

JA 19–20.

Although Bilski developed this method with energy hedging in mind, Claim 1 does not require a link to energy hedging and Bilski specifically dis-claims any limitation on the embodiment of the invention. See JA 19 ("[I]t is distinctly understood that the invention is not limited [to the preferred embodiments] * * *."). Claim 1 does not specify a particular method for determining how to "identify[]" persons or entities with a counter-risk position or how to "balance[]" the risk position of the consumer transaction; it seeks to cover any possible method with these characteristics. See *In re Morris*, 127 F.3d 1048, 1055 (Fed. Cir. 1997).

Claim 1 therefore does not satisfy Section 101, because it is a general claim on the concept of hedging and thus an attempt to patent an abstract idea. Its vague steps preempt "every possible way of performing the steps of the plan, by human or by any kind of machine or by any combination thereof." Pet. App. 184a. As a result, "the claim is so broad that it is directed to the 'abstract idea' itself, rather than a practical implementation of the concept." *Ibid.*

Claim 1 suffers from a defect similar to that of Morse's eighth claim—by trying to cover all possible uses of an idea (including those the claimant has not invented), the claim degenerates into a disembodied concept without a particular application. The distinction between Bilski's claim and a related claim that might satisfy the non-preemption criterion parallels the distinction between Morse's failed eighth claim on telegraphy and Alexander Graham Bell's successful patent for telephony. As this Court explained in *Benson*, whereas Morse claimed an entire field of science (electromagnetism), Bell claimed only a particular method and not "all telephonic use of electricity." 409 U.S. at 68–69; compare *Morse*, 56 U.S. (15 How.) at 111–113, with *The Telephone Cases*, 126 U.S. 1, 534–538 (1888). As far as Section

101 is concerned, Claim 1 here is indistinguishable from Morse's eighth claim.

B. This Court Has Rejected Artificial Limits On What Constitutes A "Process."

This Court has had several opportunities to address the meaning of Section 101. On each occasion, the Court has been mindful that technologies evolve and that the patent system was designed to be flexible and to accommodate new paths for innovation. Nonetheless, in affirming the rejection of the patent application here, the Federal Circuit asserted that this Court

> has enunciated a definitive test to determine whether a process claim is tailored narrowly enough to encompass only a particular application of a fundamental principle rather than to pre-empt the principle itself. A claimed process is surely patent-eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing.

Pet. App. 12a. This Court has never required such a "definitive" test, and with good reason: such a test would undermine the objectives of the patent system.

1. *This Court has never required a "process" to be tied to an apparatus or to be transformative to be patentable.*

The machine-or-transformation formulation originated in *Cochrane* v. *Deener*, 94 U.S. 780 (1877), where this Court stated that Section 101's reference to "process" includes methods (a) that are tied to an apparatus or (b) that, when "performed upon the subject-matter," result in its being "transformed and reduced to a different state or thing." *Id.* at 788.

Cochrane considered whether an improved process for manufacturing flour constituted patentable subject matter. The applicant did not invent the machinery used in the individual steps of his process, *id.* at 785–786, but instead invented a series of steps that, when considered as a whole, "produced a revolution in the manufacture of flour," *id.* at 787. The Court provided the two examples of a patentable "process" only after emphasizing that "it cannot be disputed" that the patentability of a process does not depend on "the particular form of the instrumentalities used." *Id.* at 787–788.

Consistent with that observation, this Court has never held that *Cochrane*'s two examples—machine-based and transformative methods—were intended to be exhaustive. Nonetheless, the Federal Circuit held that the machine-or-transformation standard is "the sole test governing § 101 analyses," Pet. App. 15a, relying upon this Court's decisions in *Benson*, *Flook*, and *Diehr*, *id.* at 12a–15a. None of those cases supports the Federal Circuit's conclusion.

To the contrary, in both *Benson* and *Flook*, the Court was careful to point out that the *Cochrane* categories were not intended to be exhaustive. See *Benson*, 409 U.S. at 71 ("[w]e do not hold that no process patent could ever qualify" if it was not "tied to a particular machine or apparatus" and did not "operate to change articles or materials to a 'different state or thing'"); *Flook*, 437 U.S. at 588 n.9 ("we assume that a valid process patent may issue even if it does not meet one of these qualifications"). *Diehr* concluded that the machine-or-transformation standard was satisfied, quoting *Benson*; there was thus no occasion to discuss the breadth of the definition of "process" in Section 101. Nothing in *Diehr* suggests that the Court was abandoning what it made clear in *Benson* and *Flook*.

2. The statutory term "process" should be interpreted broadly.

In contrast to the Federal Circuit, which *narrowed* Section 101, this Court has emphasized that "the language of § 101 is extremely broad" and that "Congress plainly contemplated that [it] would be given wide scope." *J.E.M. Ag Supply, Inc.* v. *Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124, 130 (2001) (quoting *Chakrabarty*, 447 U.S. at 308). Beyond the historical limitations just discussed (the exclusion of laws of nature, natural phenomena, and abstract ideas), this Court has "more than once cautioned" that courts "should not read into the patent laws limitations and conditions which the legislature has not expressed." *Diehr*, 450 U.S. at 182 (quoting *Chakrabarty*, 447 U.S. at 308, in turn quoting *United States* v. *Dubilier Condenser Corp.*, 289 U.S. 178, 199 (1933)). Applying that principle, the Court has held that "anything under the sun that is made by man" presumptively constitutes patentable subject matter under Section 101. *Diehr*, 450 U.S. at 182 (quoting S. REP. NO. 82-1979, at 5 (1952), and H.R. REP. NO. 82-1923, at 6 (1952)); accord *Bonito Boats, Inc.* v. *Thunder Craft Boats, Inc.*, 489 U.S. 141, 154 (1989); *Chakrabarty*, 447 U.S. at 308.

In interpreting "process," the Court has applied the general principle that an undefined statutory term should be given its "ordinary, contemporary, common meaning." *Diehr*, 450 U.S. at 182. The ordinary meaning of "process" is broad: "an artificial or voluntary progressively continuing operation that consists of a series of controlled actions or movements systematically directed toward a particular result or end." WEBSTER'S NEW INTERNATIONAL DICTIONARY 1808 (3d ed. 1986); see also WEBSTER'S NEW INTERNATIONAL DICTIONARY 1972 (2d ed. 1950) ("A series of actions, motions, or operations definitely conducing to an end, whether voluntary or involuntary."). Giving the term its broad, ordinary meaning leaves the door open to the granting of patents with respect to new technologies. A construction that is not technology-neutral would threaten to arbitrarily short-circuit entire fields of development.

When Congress wishes to exclude a particular subject matter from the patent laws, it knows how to do so. For example, Congress has instructed the PTO to issue no patents for inventions "useful solely in the utilization of special nuclear material or atomic energy in an atomic weapon." 42 U.S.C. § 2181(a); cf. 17 U.S.C. § 102(b) (exclusions from copyrightable subject matter). But Congress has made no similar exception for certain types of processes, and the courts are not free to introduce a new exception in its stead.

Reinterpreting Section 101 to impose restrictions on the scope of patentable processes not found in the statutory text also would be inconsistent with this Court's decision in *KSR International Co.* v. *Teleflex Inc.*, 550 U.S. 398 (2007). There, in assessing the evaluation of nonobviousness under Section 103, the Court rejected replacement of the "expansive and flexible approach" mandated by the statute with a "rigid approach" that added criteria not found in the text. *Id.* at 415. So too here, the Federal Circuit erred by inserting into Section 101 restrictions not found in the statutory text.

Finally, this Court has made clear that "process" claims must be "considered as a whole." *Diehr*, 450

U.S. at 188. Thus, "a new combination of steps in a process may be patentable even though all the constituents of the combination were well known and in common use before the combination was made." *Ibid.* By refusing to compartmentalize process claims, the Court has provided further confirmation that Section 101 should not be construed to embody restrictive standards not reflected in the statutory text and that the "process" standard should be applied in light of all the facts and circumstances in a particular case.

C. The Federal Circuit's Narrow Standard Creates Needless Uncertainty About Patentable Subject Matter.

The Federal Circuit's machine-or-transformation standard for patentable subject matter is not only inconsistent with this Court's precedents; it will also lead to needless confusion about what constitutes patentable subject matter as technology evolves. The Federal Circuit in effect acknowledged as much, when it said that "future developments in technology or the sciences may present difficult challenges to the machine-or-transformation test," such that "the Supreme Court may ultimately decide to alter or perhaps even set aside this test to accommodate emerging technologies." Pet. App. 17a.

It is unwise in any circumstance to adopt a test that is acknowledged to be under-inclusive. These concerns are even greater in the context of the patent system, which is designed to be forward-looking and to promote the development of new fields of innovation. As Judge Rader aptly put it, the Federal Circuit's test "links patent eligibility to the age of iron and steel at a time of subatomic particles and terabytes." Pet. App. 134a (dissenting opinion).[5]

In the modern age, the Federal Circuit's test apparently contemplates that innovators will pursue new avenues even if they may not satisfy the machine-or-transformation test, somehow expecting that their cause will lead the Federal Circuit or this Court to craft a new standard. That is not a reasonable expectation. "Uncertainty is the enemy of innovation," Pet. App. 61a (Newman, J., dissenting), and an under-inclusive test will have an obvious chilling effect. To avoid this counterproductive outcome—which is compelled neither by the text of Section 101 nor by this Court's precedent—the standard for Section 101 must be sufficiently flexible to account for new fields of innovation.

Software provides a case study for the predicament that arises from the Federal Circuit's test. From a technical perspective, "software" is typically a series of commands that reside on a storage medium and are performed on a general purpose computer to accomplish a desired task. The physical counterpart of software is "hardware." Virtually any task that is performed by programming a general purpose computer with software could also be achieved by hard-coding those same instructions into a hardware device. To advance innovation, it would make little sense to differentiate between tasks performed by hardware and those performed by software. Recognizing this, the Federal Circuit has held that "[computer] programming creates a new machine, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software." *In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994) (en banc).

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[5] Even during the age of iron, the machine-or-transformation test was understood to present a sufficient—but not necessary—criterion for patentable subject matter. The *Cochrane* formulation was designed "not to limit process patentability but to point out that a process is not limited to the means used in performing it." *In re Prater*, 415 F.2d 1378, 1387–1388 (C.C.P.A. 1968), aff'd in part and rev'd in part on reh'g, 415 F.2d 1393 (C.C.P.A. 1969).

Accordingly, even under the court of appeals' restrictive machine-or-transformation test, software-implemented inventions are patentable subject matter—so long as they do not preempt a law of nature, a natural phenomenon, or an abstract idea. Notwithstanding this framework, the *Bilski* decision has resulted in an increased level of uncertainty within the Board of Patent Appeals and Interferences. Some panels have concluded that *Bilski* requires the rejection of methods that "could be implemented on a software system." *Ex parte Motoyama*, 2009 WL 524946, at *5 (B.P.A.I. Feb. 27, 2009); *Ex parte Scholl*, 2009 WL 288204, at *7 (B.P.A.I. Feb. 4, 2009). Another panel has concluded that software, to be patentable, requires a "structural tie to an article of manufacture, machine, process or composition of matter." *Ex parte Petculescu*, 2009 WL 1718896, at *8 (B.P.A.I. June 4, 2009). Although these decisions fail to comport with established precedent, see, *e.g.*, *Eolas Techs., Inc.* v. *Microsoft Corp.*, 399 F.3d 1325, 1339 (Fed. Cir. 2005) ("Without question, software code alone qualifies as an invention eligible for patenting under these categories, at least as processes."), they underscore the need for this Court to develop an appropriately flexible standard for Section 101 compliance and to reaffirm that software-implemented inventions are eligible for patent protection. They also underscore the need for clarity in this Court's opinion.

Although the Federal Circuit sought to provide clarity through the opinion below, the early response from the Patent Office suggests that, not only was the decision based on faulty reasoning, but confusion reigns. Accordingly, even if the Court decides to affirm the Federal Circuit's adoption of the machine-or-transformation test, it is critical that the Court make clear that software-implemented inventions are protected by that framework.

Further difficulty arises in contemplating *future* developments in software and other fields. Just as there is neither a statutory basis nor a practical reason to award patents to hard-wired appliances but not to software-programmed general computers that perform the same process, there is no reason to distinguish between software that runs on personal computers and software that operates on the Internet. But at least one district court has concluded that *Bilski* mandates such a distinction. See *CyberSource Corp.* v. *Retail Decisions, Inc.*, 620 F. Supp. 2d 1068 (N.D. Cal. 2009).

Dissenters on the Federal Circuit recognized the limitations of the majority's standard. Already, inventions that employ "today's electronic and photonic technology" may be excluded by the machine-or-transformation limitation, even though they "contribute to the vigor and variety of today's Information Age" in the manner that the Patent Act is designed to promote. Pet. App. 60a (Newman, J., dissenting). As new fields of innovation develop, those limitations will become even more pronounced and even more damaging to innovation.

D. The Proper Standard Should Acknowledge The Role Of Section 101 Patentability As A Threshold Determination.

This Court's precedent establishes that mere ideas are not patentable but that methods satisfying *Cochrane* are. The remaining question is how to assess the Section 101 eligibility of methods that neither claim an abstract idea, as determined by the non-preemption test, nor are encompassed by the *Cochrane* categories. For this task, the ordinary tools of statutory construction are all that is required. The appropriate standard should reflect the text of the patent laws and carry out their underlying policy: that inventors should be rewarded for contributions to knowledge but not for those basic scientific principles over which no person should be allowed exclusive rights.

Toward this end, Section 101 acts as an important—if only partial—restraint. Section 101 precludes patent protection for abstract principles or natural laws—or their equivalents—that claim too much and would impede technological advancement if they could be controlled by one person. But Section 101 is not the sole filter. Read in context, its purpose must be to set a threshold requirement for patentability that, while meaningful, does not bear the full burden of ensuring that only meritorious inventions receive the benefits of a patent. That burden is shared by Sections 102, 103, and 112, which impose additional requirements of novelty, nonobviousness, and enablement.

The threshold set by Section 101 must not be rigid, lest it fail to recognize the dynamic nature of scientific progress and inventorship. As this Court has previously mentioned, the Patent Act was designed to reach "anything under the sun that is made by man." *Chakrabarty*, 447 U.S. at 308. In this spirit, the Court should adopt a standard that prevents patents on the building blocks of innovation—principally through the non-preemption doctrine—while staying true to the broad ordinary meaning of "process." This can be achieved by continuing to employ the preemption analysis. The cost of an under-inclusive test is serious, because inventions not pursued cannot be quantified. The cost of an over-inclusive approach is decidedly less pronounced, because borderline claims still will be required to satisfy the other stringent criteria for patentability. Consistent with this Court's teachings, therefore, the standard under Section 101 should err on the side of finding processes to be patentable subject matter.

CONCLUSION

The judgment of the court of appeals should be affirmed.

Respectfully submitted.

ANDREW J. PINCUS
Counsel of Record
DAN HIMMELFARB
BRIAN D. NETTER
Mayer Brown LLP
1909 K Street, NW
Washington, DC 20006
(202) 263-3000
Counsel for Amicus Curiae
Business Software Alliance

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AMICUS
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BRIEF

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In The
Supreme Court of the United States

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BERNARD L. BILSKI AND RAND A. WARSAW,

Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,

Respondent.

◆

On Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

◆

BRIEF OF *AMICUS CURIAE* CARIS DIAGNOSTICS, INC. IN SUPPORT OF PETITIONERS

◆

GIDEON A. SCHOR
Counsel of Record
VERN NORVIEL
RAY AKHAVAN
1301 Avenue of the Americas,
40th Floor
New York, NY 10019
(212) 999-5800
Attorneys for Amicus Curiae
Caris Diagnostics, Inc.

COCKLE LAW BRIEF PRINTING CO. (800) 225-6964
OR CALL COLLECT (402) 342-2831

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INTEREST OF *AMICUS CURIAE*[1]

Amicus curiae Caris Diagnostics, Inc. ("Caris") is a leader in personalized medicine, which is the relatively new science of tailoring therapeutics for individual patients through diagnostic tests for genetic mutations known as biomarkers. By using such molecular profiling techniques, Caris enables patients to receive safe and effective drug therapies for cancer and other serious illnesses.

For example, Caris's laboratories examine tumors to discover biomarkers that are associated with drug resistance or toxicity. A recent study showed that cetuximab (or Erbitux®), a standard treatment for colorectal cancer, shrinks tumors in 40% of patients lacking a particular genetic mutation but is *ineffective* in patients possessing the mutation.[2] Before the sequencing of the human genome and the possibility of fast, affordable, and accurate tests for individualized genetic profiles, the treatment would be prescribed generally to colorectal cancer patients, and only time would tell which subpopulation of patients would have treatment-resistant tumors.

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[1] Counsel for *amicus* appear in this matter in their individual capacities and not on behalf of the law firm with which they are affiliated. Counsels' law firm represents many technology companies operating in diverse business sectors, including biotechnology, electronics, software, and internet companies, and such companies may have different opinions on the issues presented by the Federal Circuit's decision below. Nothing in this brief should be attributed or imputed to counsels' law firm or its clients, other than those specific ones on whose behalf this brief is filed.

Counsel for all parties have consented to the filing of this brief, and their consents have been lodged with the Clerk of this Court. No counsel for any party had any role in authoring this brief, and no person other than the named *amicus* and its counsel has made any monetary contribution to the preparation and submission of this brief. *See* Rule 37.

Now that biomarkers for resistance to the drug have been discovered, and Caris has developed tests for those biomarkers, an oncologist need not waste valuable time with hit-and-miss treatment. Instead, to obtain early validation of drug choices, the oncologist sends a biopsy to Caris – one of thousands of biopsies that Caris examines daily – which then determines whether the particular patient's tumor has the biomarker associated with drug resistance. Caris's development and provision of such biomarker tests[3] thus enable doctors to devote critical months to effective treatments. Caris's work thereby saves lives

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[2] *See* Astrid Lievre *et al.*, *KRAS Mutations As an Independent Prognostic Factor in Patients With Advanced Colorectal Cancer Treated With Cetuximab*, 26 J. Clinical Oncology 374, 375 (Jan. 20, 2008), *available at* http://jco.ascopubs.org/cgi/content/full/26/3/374; *see also* Christos S. Karapetis, M.D., *et al.*, *K-ras Mutations and Benefit from Cetuximab in Advanced Colorectal Cancer*, 359 New Eng. J. Med. 1757, 1757-65 (Oct. 23, 2008), *available at* http://content.nejm.org/cgi/reprint/359/17/1757.pdf.

[3] Such biomarker tests when used to diagnose a patient's illness or medical condition are known as diagnostics, and when used to diagnose a patient's resistance to a particular drug are known as theragnostics. For simplicity, the term "diagnostics" as used herein refers to both diagnostics and theragnostics.

– as well as the several hundred million dollars that would otherwise be spent on useless, expensive therapy.[4]

In patent terms, each biomarker test is a method for determining the presence of the biomarker in a given patient. A process patent provides the soundest legal protection for the intellectual property underlying each such method, and thus provides the strongest incentive for venture capitalists and large, established companies to invest – and hence fund research, development, regulatory approval, and commercialization – in hopes of obtaining a return in the marketplace. Since roughly half of Americans will get cancer before dying, and about half of these will die of their cancer,[5] continued financing is important not only to Caris and other diagnostics companies but also to public health.

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[4] Roxanne Nelson, *GICS 2009: Huge Cost Savings From KRAS Testing in Metastatic Colorectal Cancer*, Medscape Medical News, Jan. 16, 2009, *available at* http://www.medscape.com/viewarticle/586946 (screening for KRAS mutations before initiating treatment with cetuximab or related drugs could result in drug cost savings of $604 million if annual American population with metastatic colorectal cancer undergoes first-line therapy with cetuximab-containing regimen). The savings to the U.S. health care system from genetic profiling to optimize treatment with a single drug are estimated to be more than $1 billion. *See* Paul H. Keckley, PhD et al., Deloitte Center for Health Solutions, *The ROI for Targeted Therapies: A Strategic Perspective Assessing the Barriers and Incentives for Adopting Personalized Medicine*, at 5 (2009) (fig. 2), *available at* http://www.personalizedmedicinecoalition.org/programs/roi_seminar_2009/ROIforTargeted%20Therapies_DCHSstudy_FINAL.pdf (estimated potential annual health care cost savings from individual dosing of Warfarin based on genetic testing are $1.1 billion with a range of $100 million to $2 billion for U.S. health care system).

In *In re Bilski,* 545 F.3d 943 (Fed. Cir. 2008), which involved a claim for a business method, the United States Court of Appeals for the Federal Circuit held that the exclusive test for determining whether a process claim recites patentable subject matter under 35 U.S.C. § 101 is whether the claim is (a) tied to a machine or (b) transforms an article into a different state or thing. Only by misapplying this Court's precedents did the Federal Circuit reach its holding. Further, by mandating the machine-or-transformation test for *all* process claims (not just business method claims), the Federal Circuit drastically narrowed the scope of patentable subject matter, undermined the settled expectations of owners of process patents, raised doubt as to the legal protection of new diagnostic and treatment methods, and diminished the ability of biotechnology companies to attract investment capital. Particularly in an economy increasingly based on information and biotechnology, the outmoded "machine tie" and "transformation" analyses are too uncertain of application to provide such companies with genuine legal protection. Moreover, the U.S. Patent and Trademark Office ("USPTO") has now adopted new guidelines for review of life sciences patents and is routinely rejecting patents based on the decision below. Without such patent protection, Caris and other biotechnology companies will face a shortage of funding and hence will be unable to make critical discoveries and to translate them into improved patient care. It is not an overstatement to say that biotechnology companies depend for their survival on strong patent protection, as only the limited exclusivity of patents will genuinely compensate such companies and their investors for their significant research and regulatory costs, and for assuming the risk of biological obstacles and fierce marketplace competition.

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[5] *See Lifetime Probability of Developing or Dying from Cancer, American Cancer Society*, July 13, 2009, *available at* http://www.cancer.org/docroot/CRI/content/CRI_2_6x_lifetime_probability_of_developing_or_dying_from_cancer.asp (indicating about 1 in 2 males and 1 in 3 females will develop cancer in their lifetime, and 1 in 4 and 1 in 5, respectively, will die from cancer).

Accordingly, Caris has a strong interest in ensuring that the decision below is reversed insofar as it held the machine-or-transformation test to be the exclusive test for patentable subject matter in process claims.

◆

SUMMARY OF ARGUMENT

The judgment of the Federal Circuit should be reversed insofar as it held the machine-or-transformation test to be the exclusive test for the patentability of claimed processes under 35 U.S.C. § 101. Subject matter is patentable if it fits into one of the four statutory categories – process, machine, manufacture, composition of matter – and is useful and man-made. Nothing in the statute or this Court's precedents requires that, to be patentable, a process must either be tied to a machine or transform an article into a different state or thing. Only fundamental principles – laws of nature, natural phenomena, and abstract ideas – are unpatentable subject matter, though an application of a fundamental principle is patentable if useful and inventive. These flexible standards governing patentability should not be replaced with a rigid, Industrial-Age rule requiring the presence of machinery or physical transformation. Such a rule would bar vast areas of innovation from patent protection and would therefore be contrary to Congress's intent that patentable subject matter be broad in scope.

Twice, this Court has ruled expressly that the machine-or-transformation test is not the exclusive test for the patentability of a process under § 101. The Federal Circuit misinterpreted both decisions by baselessly reading into them a directive of exclusivity and by wholly ignoring the decisions' express rejection of exclusivity. The essential holding of the decisions is that a process claim may not preempt a fundamental principle, and not that machine implementation and transformation are the exclusive means by which a process claim can avoid such preemption.

The decision below dramatically weakens patent protection for diagnostics and thus will chill investment and innovation. Although certain steps of some diagnostic methods involve machines or transformations, the focus of diagnostic methods is the generation of information. Thus, it is unclear if machine implementation and transformation are sufficiently central to each method to satisfy the machine-or-transformation test. Such doubt will discourage investment by venture capitalists and larger, mature companies, because of resulting uncertainty as to whether future diagnostic innovations will receive patent protection. Moreover, the decision below applies the machine-or-transformation test to *all* claimed processes – including diagnostic methods – and not just business methods. Consequently, diagnostic method claims are already being rejected under *Bilski*, and many already-issued patents are now subject to invalidity defenses in infringement litigation.

Without the limited exclusivity of patent protection, health care companies and their investors will lose incentive to research, develop, and commercialize new diagnostics. The decision below constitutes the sort of fundamental change in settled patent law that only Congress is equipped to make.

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ARGUMENT

I. THE FEDERAL CIRCUIT MISAPPLIED THIS COURT'S PRECEDENTS, WHICH HAVE NEVER HELD THE MACHINE-OR-TRANSFORMATION TEST TO BE THE EXCLUSIVE TEST FOR THE PATENTABILITY OF CLAIMED PROCESSES

Under this Court's precedents, patentable subject matter under 35 U.S.C. § 101 consists of any man-made and useful process, machine, manufacture, or composition of matter, but must not be laws of nature, natural phenomena, or abstract ideas. Lest lower courts usurp Congress's function, this Court has warned that "courts should not read into the patent laws limitations and conditions which the legislature has not expressed." *Diamond v. Chakrabarty,* 447 U.S. 303, 308 (1980) (citation and internal quotation marks omitted). Moreover, this Court has twice held that subject matter may be patentable even if it does not satisfy the machine-or-transformation test. *See Gottschalk v. Benson,* 409 U.S. 63, 71 (1972); *Parker v. Flook,* 437 U.S. 584, 588 n.9 (1978). Contrary to the statute and these clear holdings, however, the court below held that a process claim cannot recite patentable subject matter under 35 U.S.C. § 101 unless it also satisfies the machine-or-transformation test. That holding is erroneous and should be reversed.

Section 101 is broadly worded:

> Whoever invents or discovers *any* new and useful process, machine, manufacture, or composition of matter, or *any* new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. § 101 (emphasis added).[6] According to the plain statutory language, subject matter is patentable as long as it fits into one of the four categories – process, machine, manufacture, composition of matter – and is useful and man-made.[7] As the repeated use of the term "any" indicates, "Congress plainly contemplated that the patent laws would be given wide scope." *Chakrabarty,* 447 U.S. at 308. In *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.,* 534 U.S. 124 (2001), this Court stated that § 101 is "extremely broad," *id.* at 130, and is a "dynamic provision designed to encompass new and unforeseen inventions," *id.* at 135. Nothing on the face of the statute

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[6] According to the statutory definitional provision, "[t]he term 'process' means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material." 35 U.S.C. § 100(b).

[7] Although § 101, which addresses patent eligibility of subject matter, also uses the term "new," it has long been held that novelty and non-obviousness should be addressed under §§ 102 and 103. 35 U.S.C. §§ 102, 103. 35 U.S.C. §§ 102, 103. *See, e.g., Diamond v. Diehr,* 450 U.S. 175, 189-91 (1981). Additional safeguards against undeserved grants of patent protection appear in § 112, which imposes the requirements of enablement, written description, and definiteness. 35 U.S.C. § 112.

requires that, to be patentable, a process (i) be tied to a machine (or, for that matter, to a manufacture or composition of matter) or (ii) transform an article into a different state or thing.[8]

This Court's only limiting gloss on § 101 is that fundamental principles – "laws of nature, natural phenomena, and abstract ideas" – are not patentable subject matter. *Chakrabarty,* 447 U.S. at 309. The reason is that such principles, like mental processes, "are the basic tools of scientific and technological work." *Benson,* 409 U.S. at 67; *Flook,* 437 U.S. at 589, 593 n.15; *Funk Bros. Seed Co. v. Kalo Inoculant Co.,* 333 U.S. 127, 130 (1948) ("[Fundamental principles] are part of the storehouse of knowledge of all men. They are . . . free to all men and reserved exclusively to none."). However, an *application* of a fundamental principle can be patentable under § 101, provided the application is useful and inventive. *See Flook,* 437 U.S. at 594 ("[E]ven though a phenomenon of nature or mathematical formula may be well known, an inventive application of the principle may be patented."); *Funk Bros.*, 333 U.S. at 130[9] ("He who discovers a hitherto unknown phenomenon of nature has no claim to a monopoly of it which the law recognizes. If there is to be invention from such discovery, it must come from the application of the law of nature to a new and useful end.").[10] If the fundamental principle cannot be applied except in a single, limited fashion, then no patent may be granted on the application; if granted, such a patent would preempt the fundamental principle and hence, in effect, be a patent on the principle itself. *Benson,* 409 U.S. at 71-72. If the claim is drawn so broadly, or is so unrelated to any particular use of a fundamental principle, that it preempts substantially all uses of that principle, it is similarly unpatentable. *Id.* at 68-69.

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[8] The Federal Circuit itself acknowledged that the machine-or-transformation test does not appear on the face of the statute. *Bilski*, 545 F.3d at 956 n.11 ("the statute itself does not explicitly mention machine implementation or transformation"). As one of the dissents below stated, "The United States Supreme Court has never held that 'process' inventions suffered a second-class status under our statutes, achieving patent eligibility only derivatively through an explicit 'tie' to another statutory category. . . . Yet second-class status is today engrafted on 'process' inventions." *Id.* at 990 (Newman, J., dissenting).

The question here is whether, in the case of a process claim, the foregoing standards need to be supplemented, or even supplanted, by an exclusive and rigid rule for distinguishing between a fundamental principle and a patentable application thereof. In Caris's view, no such supplementation is needed: The rule in question, the machine-or-transformation test, would replace flexible standards – whose merit lies in their ability to accommodate new and unforeseen technologies – with an unduly limited choice, conditioning patentability on the presence of either machinery or physical transformation.[11] The language of the test impermissibly looks backward to the brute physicality of the Industrial Age rather than forward to the subtle realities of the Information Age. As articulated by Thomas Jefferson, author of the nation's first patent legislation, the goal of the Patent Act is that "'ingenuity should receive a liberal encouragement.'" *Chakrabarty,* 447 U.S. at 308 (quoting *5 Writings of Thomas Jefferson* 75-76 (Washington ed. 1871)). Mandating the machine-or-transformation test would bar vast areas of innovation from such encouragement and thus would be contrary to congressional intent.

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[9] Although *Funk Bros.* concerned a product claim, its holding applies to a process claim. *Diehr*, 450 U.S. at 188 n.11 (citing *Benson*, 409 U.S. at 68).

[10] *See also Diehr*, 450 U.S. at 187 ("It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection."); *Mackay Radio & Telegraph Co. v. Radio of Am.*, 306 U.S. 86, 94 (1939) ("While a scientific truth, or the mathematical expression of it, is not a patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be.").

In assessing the patentability of process claims, this Court has never required the machine-or-transformation test and has twice ruled that it is not the exclusive patentability test for such claims. In *Benson,* the Court, after reviewing its decisions sustaining patents on the basis of a transformation involving no machine, held:

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[11] This Court has recognized that rigid tests are often inadequate for addressing patentability. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 415 (2007) ("We begin by rejecting the rigid approach" used by lower court for determining patentability under 35 U.S.C. § 103).

> It is argued that a process patent *must* either be tied to a particular machine or apparatus or *must* operate to change articles or materials to a 'different state or thing.' *We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.*

409 U.S. at 71 (emphasis added).[12] This express holding that the machine-or-transformation test is not the exclusive test for the patentability of claimed processes was reaffirmed in *Flook*:

> The statutory definition of "process" is broad. . . . An argument can be made, however, that this Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a "different state or thing." . . . As in *Benson, we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents.*

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[12] Inexplicably, the majority below called these statements "equivocal." 545 F.3d at 956. As Judge Newman's dissent observed, there is nothing equivocal about the phrase "We do not hold . . . ." *See id.* at 979 (Newman, J., dissenting).

437 U.S. at 588 n.9 (emphasis added) (citations omitted).[13] Thus, the Court concluded that while claims to processes have been upheld when the process at issue was in fact tied to a machine or transformed an article into a different state or thing, nothing in the Court's holdings has elevated either a machine tie or a transformation into the *sine qua non* of patentability or has turned such facts into legal requirements.

In view of *Flook* and *Benson*, the principal basis for the Federal Circuit's holding may be quickly rejected. The holding was based on the following sentence from *Benson,* which the majority below quoted three times: "Transformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines." *Benson,* 409 U.S. at 70; *see Bilski,* 545 F.3d at 954, 955-56, 956. According to the Federal Circuit, the *Benson* Court's use of the definite article "the" – instead of the indefinite article "a" – before the word "clue" proved that the Court meant the machine-or-transformation test to be the *exclusive* test for the patentability of a process. *See Bilski,* 545 F.3d at 955-56 & n.11. Moreover, the Federal Circuit, noting that *Diehr* repeated *Benson*'s "clue" sentence without repeating *Benson*'s and *Flook*'s holding of non-exclusivity, essentially held that *Diehr* overruled these non-exclusivity holdings *sub silentio*. For several reasons, the Federal Circuit's conclusions are fatally flawed.

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[13] The majority below tendentiously omitted the phrase "An argument can be made" from its quotation of this portion of *Flook*. *See* 545 F.3d at 956.

First, if the *Benson* Court had wanted to make transformation the exclusive legal test of patentability for a process untied to a machine, it would have used language far more definite than the hesitant and unemphasized phrase "the clue."

Second, the quite debatable sentence on which the Federal Circuit relied appears in the same *Benson* opinion as the *explicit* holding that a process may be patentable even if it involves no machine implementation or transformation. Because the Court that authored the proposition relied on by the Federal Circuit also held the proposition non-exclusive, any argument for exclusivity is foreclosed.

Third, the Federal Circuit's argument that *Diehr* relied on *Benson*'s "clue" sentence but did not repeat *Benson*'s holding of non-exclusivity, *see Bilski*, 545 F.3d at 956, proves nothing. The process at issue in *Diehr* involved a machine – a rubber molding press – and transformed raw rubber into cured rubber. 450 U.S. at 180, 184. The Court held the process patentable. *Id.* But nothing in the holding remotely stated that a process that involves neither a machine nor a transformation cannot be patentable.[14] That

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[14] An additional reason why *Diehr* did not hold that a process involving no machine or transformation is unpatentable under § 101 is that the process at issue there involved *both* a

(Continued on following page)

statement was so firmly rejected in *Benson* and *Flook* that the rejection simply did not need repeating in *Diehr.* Had the *Diehr* Court understood itself to be overruling the explicit non-exclusivity holdings of *Benson* and *Flook,* the majority opinion in *Diehr* would surely have mentioned that understanding. That it did not do so demonstrates that the non-exclusivity holdings of *Benson* and *Flook* remain good law after *Diehr.*

Fourth, the *Diehr* Court itself described *Benson* and *Flook* as holding no more than that a fundamental principle is unpatentable. 450 U.S. at 185. That is, the *raison d'etre* of a machine tie or a transformation was to avoid patenting a fundamental principle – meaning that if a process claim found some other way to avoid claiming a fundamental principle, then that claim would be patentable under § 101. *See Bilski,* 545 F.3d at 1013 ("The Supreme Court stated that all of the transformation and machine linkage explanations simply restated the abstractness rule." (Rader, J., dissenting)). In other words, the *Benson* Court's holding was that the process claim there preempted a mathematical formula (and thus was not drawn to patentable subject matter), and not that the machine-or-transformation test is the only means by which a process claim can avoid such preemption.

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machine and a transformation. *See Bilski*, 545 F.3d at 981 (Newman, J., dissenting). As a result, the issue of whether a process involving no machine or transformation is patentable was not squarely presented.

Finally, *Diehr* shows that the Federal Circuit, by focusing on machinery and transformation, confused instantiation of the governing standards with the standards themselves. *Diehr* held that

> when a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect *(e.g., transforming or reducing an article to a different state or thing)*, then the claim satisfies the requirements of § 101.

450 U.S. at 192 (emphasis added). If transformation had been a critical requirement of the Court's holding, it would not have been mentioned in a parenthetical aside, and it would not have been introduced by "*e.g.*" Indeed, the use of "*e.g.*" implies, contrary to the exclusivity of the Federal Circuit's holding, that any number of means *besides transformation* might be employed to ensure that the claim is drawn to a patentable process rather than an unpatentable fundamental principle.

The Federal Circuit's decision should accordingly be reversed.

II. AN AFFIRMANCE WOULD CALL INTO QUESTION INNUMERABLE PATENTS FOR DIAGNOSTIC METHODS AND WOULD CHILL FUTURE INNOVATION

Venture capital is the lifeblood of biotechnology companies and their life-saving discoveries. But venture capitalists and established companies will make few investments unless the discoveries receive strong patent protection. Any uncertainty in the availability of such protection will chill investment and hence innovation. For several reasons, the decision below, which is not limited to business methods and applies to all processes in every field of endeavor, will dramatically weaken patent protection for diagnostics, and thus will jeopardize funding for the entire industry.

Patents for diagnostics often claim a two-step method that consists of a non-specific assay or other measurement, followed by a correlation between the assay result and a disease, medical condition, or resistance to a particular treatment.[15] The focus of

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[15] In dissent below, Judge Rader, addressing questions raised in the dissent from the dismissal of the writ of certiorari granted in *Laboratory Corporation of America v. Metabolite Laboratories, Inc.*, 548 U.S. 124, 125-39 (2006), cogently explained why such diagnostic method claims recite patentable subject matter under § 101:

> That dissent is premised on a fundamental misapprehension of the distinction between a natural phenomenon and a patentable process. . . .

(Continued on following page)

each such method is the generation of information useful for diagnosis and treatment. While the first step in such methods is often – though not always – an assay that employs a machine or apparatus (such as a computer, thermocycler, gas chromatograph, gene chip, and/or mass spectrophotometer) and transforms components of tissue or blood samples into detectible chemical complexes (such as antibody-protein or nucleic acid complexes),[16] it is *and will*

> The fundamental error in that *Lab. Corp.* dissent is its failure to recognize the difference between a patent ineligible relationship – i.e., that between high homocysteine levels and folate and cobalamin deficiencies – and a patent eligible process for applying that relationship to achieve a useful, tangible, and concrete result – i.e., diagnosis of potentially fatal conditions in patients. . . . Moreover, testing blood for a dangerous condition is not a natural phenomenon, but a human invention.
>
> The distinction is simple but critical: A patient may suffer from the unpatentable phenomenon of nature, namely high homocysteine levels and low folate. But the invention does not attempt to claim that natural phenomenon. Instead the patent claims a process for assaying a patient's blood and then analyzing the results with a new process that detects the life-threatening condition. Moreover, the sick patient does not practice the patented invention. Instead the patent covers a process for testing blood that produces a useful, concrete, and tangible result: incontrovertible diagnostic evidence to save lives.

Bilski, 545 F.3d at 1013-14 (Rader, J., dissenting).

[16] Not every diagnostic method patent involves an assay, however. When a diagnostic method involves no assay, it may be particularly vulnerable to rejection under the

(Continued on following page)

remain doubtful whether machine implementation and transformation are sufficiently central to each method to satisfy the machine-or-transformation test. *See Bilski,* 545 F.3d at 961-62 ("The use of a specific machine or transformation or an article must impose *meaningful limits* on the claim's scope . . . . Th[e] transformation must be *central* to the purpose of the claimed process." (emphasis added)); *id.* at 1015 (Rader, J., dissenting) ("[The majority] opinion propagates *unanswerable* questions: What form or amount of transformation suffices? . . . What link to a machine is sufficient to invoke the 'or machine' prong?" (emphasis added)).[17] Such doubt creates a significant disincentive for investment because of the consequent uncertainty as to whether future innovations in molecular diagnostics will be accorded patent protection. *See Bilski,* 545 F.3d at 1014 (Rader, J., dissenting) ("[T]his court inadvertently advises investors that they should divert their unprotectable investments away from discovery of 'scientific relationships' within the body that diagnose breast cancer or Lou Gehrig's disease or Parkinson's . . . .").

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machine-or-transformation test, as the discussion below concerning the '180 Office Action reveals.

[17] Because of the risk inherent in myopic attention to only one step in a process, *Diehr* warns that a court, in assessing the patentability of a claimed process, must consider the claim "as a whole." *Diehr,* 450 U.S. at 188. Yet the majority opinion below runs afoul of this admonition by requiring that, in a process claim, the step involving a transformation – such as might occur during the assay step of a two-part diagnostic method – be "central" to the process. 545 F.3d at 962.

The danger to personalized medicine is clear. Before the year was out, the Federal Circuit had used the decision below to invalidate claims in a patent for an immunization method. *See Classen Immunotherapies, Inc. v. Biogen IDEC,* No. 2006-1634, 2008 WL 5273107 (Fed. Cir. Dec. 19, 2008); *see also King Pharms., Inc. v. Eon Labs, Inc.,* 593 F. Supp. 2d 501, 512-13 (E.D.N.Y. 2009) (invalidating treatment method claim under *Bilski*). On December 3, 2008, in a presentation concerning personalized medicine, the USPTO explicitly applied the holding below to a theragnostic method for selecting a treatment for breast cancer[18] – belying Respondent's assertion in its opposition to certiorari that this matter implicates only business methods and not "frontier technologies," *see* Brief for the Respondent in Opposition, *Bilski v. Doll,* No. 08-964, 2009 WL 1179332, at *14 (Sup. Ct. May 1, 2009). Early in 2009, the USPTO issued guidelines to patent examiners for applying the machine-or-transformation test to process claims in view of the decision below.[19] The guidelines stated that "reciting a specific machine or a particular transformation of a specific article in an insignificant step, such a[s] data gathering or outputting, is not sufficient to pass the test." Bilski Guidance Memo at 1. Left unclear, however, is whether an assay or other measurement constitutes "data gathering."

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[18] *See* Kathleen Bragdon, Quality Assurance Specialist, Technology Center 1600, USPTO, *A Look at Personalized Medicine*, at slide 16, *available at* http://www.cabic.com/bcp/120308/.

[19] *See* Memorandum dated January 7, 2009, from John J. Love, Deputy Commissioner for Patent Examination Policy to the Technology Center Directors and Patent Examining Corps ("Bilski Guidance Memo"), *available at* http://www.uspto.gov/web/offices/pac/dapp/opla/documents/bilski_guidance_memo.pdf.

USPTO Examiners have begun rejecting diagnostic method claims under *Bilski.* On July 7, 2009, an Examiner rejected U.S. Application Serial No. 10/888,180[20] (the "'180 Office Action"), claim 1 of which was rejected under *Bilski.* Claim 1 described a method for detecting endometrial pathology by detecting a plurality of polypeptides in a test sample to obtain a test profile, comparing the test profile to a reference protein profile, and determining that a patient has an endometrial pathology where a difference is measured with respect to at least one biomarker. Acknowledging the holding below, the Examiner asserted that a claimed process is patentable only if it meets the machine-or-transformation test. '180 Office Action, p. 4 (citing *Bilski*), *available at* http://portal.uspto.gov/external/portal/pair (Application No. 10/888,180; file wrapper). The Examiner then stated that "the claimed subject matter recites steps for obtaining a patient's sample, detecting polypeptides in the test sample to yield a profile, and providing a result to a user in a user readable format *without requiring any specific machines for performing these steps.*" *Id.* (emphasis added). Finally, the Examiner stated that the "claimed subject matter recites steps for obtaining a patient sample and detecting polypeptides . . . [but that] . . . these limitations *do not require any assays for performing these steps and therefore do not explicitly result in a transformation of an article.*" *Id.* (emphasis added).[21] Similar rejections are certain to follow.

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[20] Assigned to Science & Technology Corporation (STC.UNM) at University of New Mexico, on reel/frame no. 021321/0457, recorded 7/31/2008, *available at* http://assignments.uspto.gov/assignments/q?db=pat (Published Application No. 20050100967).

It is not just pending applications that are now in jeopardy: Hundreds, even thousands, of already-issued patents are now subject to invalidity defenses in infringement litigation. Many such patents recite diagnostic methods involving neither an assay (or other transformative measurement) nor machine implementation. Many others involve an assay in which the transformation of the tissue sample's components may not be considered sufficiently "central to the purpose of the claimed process," *Bilski,* 545 F.3d at 962, because the transformation is incidental to the purpose of generating diagnostic information. Moreover, the jeopardy and uncertainty created by *Bilski* will upset the settled expectations of those who, in obtaining patents for claims that may now run afoul of the machine-or-transformation test, followed the law as it existed at the time of the patent application. *See Festo v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 724 (2002) ("'[C]ourts must be cautious before adopting changes that will disrupt the settled expectations of the inventing community.'" (citation omitted));[22] *see also Payne v.*

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[21] Although the Examiner indicated that addition of an assay would overcome the transformation-based rejection, *see* '180 Office Action, p. 4, the addition could well be insufficient in view of the statement in the majority opinion below that "the transformation must be *central* to the purpose of the claimed process." *Bilski,* 545 F.3d at 962.

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[22] The *Festo* Court explained:

> The responsibility for changing [settled law] rests with Congress. . . . Fundamental alterations in these rules risk destroying the legitimate expectations of inventors in their property. The petitioner in *Warner-Jenkinson* requested another bright-line rule . . . at the cost of disrupting the expectations of countless existing patent holders. We rejected that approach: "To change so substantially the rules of the game now could very well subvert the various balances the PTO sought to strike when issuing the numerous patents which have not yet expired and which would be affected by our decision." [*Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 17, 32 n.6 (1997)]; see also *id.*, at 41, 117 S.Ct. 1040 (GINSBURG, J., concurring) ("The new presumption, if applied woodenly, might in some instances unfairly discount the expectations of a patentee who had no notice at the time of patent prosecution that such a presumption would apply"). As *Warner-Jenkinson* recognized, patent prosecution occurs in the light of our case law. Inventors who amended their claims under the previous regime had no reason to believe they were conceding all equivalents. If they had known, they might have appealed the rejection instead. There is no justification for applying a new and more robust estoppel to those who relied on prior doctrine.

Festo, 535 U.S. at 739.

Tennessee, 501 U.S. 808, 828 (1991) (adhering to established law, and to consequently settled expectations, is particularly important "in cases involving property and contract rights, where reliance interests are involved"); *Bilski,* 545 F.3d at 977, 993 (Newman, J., dissenting). Some of the more well-known examples of patents now in danger include:

- **Prognosis for Colon Cancer:** Claim 9 of U.S. Patent No. 7,163,801 assigned to National Institutes of Health, U.S. Dept. of Health and Human Services, is directed to a method of determining a prognosis for survival for colon cancer in a patient having stage II colon carcinoma by measuring levels of a biomarker in a colon cancer cell-containing sample: "A method of determining a prognosis for survival for a colon cancer patient having stage II colon carcinoma, comprising: (a) measuring levels of TUCAN polypeptide and one or more biomarker polypeptides selected from the group consisting of cIAP2, Apaf1, Bcl-2 and Smac in a colon cancer cell-containing sample from said colon cancer patient, and (b) comparing the level of TUCAN polypeptide and the one or more selected biomarker polypeptides in said sample to a reference level of TUCAN polypeptide and said one or more selected biomarker polypeptides from normal colon tissue, wherein a lower level of TUCAN polypeptide and a higher level of any of Apaf1, Bcl-2, or

Smac, or a lower level of TUCAN polypeptide and a lower level of cIAP2 in said sample relative to said reference level correlate with increased survival of said patient."

- **Colon Neoplasia Detection:** Claim 13 of U.S. Patent No. 7,485,420, assigned on its face to Case Western Reserve University, identifies a method comprising determining the likelihood that a human subject has colon neoplasia by detecting a vimentin expression level relative to a control: "A method for detecting the likelihood that a human subject has colon neoplasia, comprising detecting vimentin protein or nucleic acid expression level in a sample from the human subject, wherein reduced expression level of vimentin protein or nucleic acid relative to a control sample from a healthy subject is indicative of the likelihood that the human subject has colon neoplasia."

- **Prostate Specific Antigen ("PSA") test for prostate cancer:** Claim 10 of U.S. Patent No. 5,840,501, assigned on its face to Bayer Corp., identifies a method consisting of any immunoassays followed by a correlation: "A method for monitoring the course of disease in a male patient diagnosed with prostate cancer, comprising the performance of a series of immunoassays over time to determine changes in the level of complexed prostate specific antigen (cPSA) in blood samples obtained from such patient, whereby changes in the cPSA blood level correlate with changes in disease status." PSA is widely used to diagnose prostate cancer.

- **Test for HIV/AIDS:** Claim 1 of U.S. Patent No. RE38352, assigned on its face to Stanford University, identifies a method consisting of any test for a specific nucleic acid mutation, followed by a correlation: "A method of evaluating the effectiveness of antiretroviral therapy of an HIV-infected patient comprising: collecting a plasma sample from an HIV-infected patient; and determining whether the plasma sample comprises nucleic acid encoding HIV reverse transcriptase having a mutation at codon 215, in which the presence of the mutation correlates positively with an accelerated immunologic decline of said patient compared to patients who do not have the mutation." Mutations in the HIV virus within an infected individual are widely used to help people find and take drugs that will make them better, and to avoid drugs that will make them sicker.

- **HER-2/neu test for breast and ovarian cancer:** Claim 1 of U.S. Patent No. 4,968,603, assigned on its face to the University of California, identifies a method consisting of any test for the amplification level of the HER-2/neu gene, followed by classifying an increased amplification relative to a reference level: "A method for screening patients to determine disease status, said method comprising: measuring the level of amplification or expression of the HER-2/neu gene in a sample from a patient suffering from breast or ovarian adenocarcinoma; and classifying those patients having an increased level of amplification or expression of the HER-2/neu gene relative to a reference level characteristic of normal cells as being more likely to suffer disease relapse or having a decreased chance of survival." HER-2/neu-related tests are widely used to determine which drug should be taken by a breast cancer patient.

- **Test for neoplastic (i.e., cancerous) tissue:** Claim 7 of U.S. Patent No. 5,955,263, assigned on its face to Johns Hopkins University and Genzyme Corp., identifies a method consisting of comparing normal and abnormal proteins, and detecting a mutation-based alteration in the amino acid sequence wherein the alteration indicates neoplasia: "A method to aid in determining neoplasia of a tissue of a human, comprising: comparing (a) p53 proteins in a human tissue suspected of being neoplastic to (b) wild-type p53 proteins in a normal tissue of said human; detecting an alteration in the amino acid sequence

> between the p53 proteins, wherein the alteration is due to a mutation in a p53 gene in the human tissue suspected of being neoplastic, wherein the mutation is selected from the group consisting of: a point, deletion, missense, and frame-shift mutation, wherein an alteration *in the amino acid sequence indicates* neoplasia." Science Magazine named p53 the "molecule of the year." Mutations in p53 help doctors determine whether a tissue is cancerous.

The repercussions for the future of biotechnology, particularly diagnostics, if the decision below is affirmed would be staggering. The health care industry relies on the economic incentives provided by our patent system, including in large part by the patentability of diagnostic method claims. If such claims were subject to invalidation as unpatentable, health care companies would lose incentive to conduct research into basic diagnostics, to develop personalized medicine tools and diagnostic systems, to validate them, and to have them approved by the FDA – all steps that are tremendously costly and necessary for the public to derive any benefit from new diagnostics. Likewise, venture capitalists, financial firms, and established companies would no longer have incentives to fund or invest in health care companies that pursue the research, development, and regulatory approval of drugs and diagnostic systems. If there is no expectation of a limited right to exclusivity, industry will respond: These areas will be neglected in favor of other areas for which patent protection is still available.[23]

Weighty policy issues underlie our carefully structured and long-standing patent system. While the decision below would change this framework and impose a further, rigid limitation on patentability, any such revision should be left to the Legislative branch. This Court so stated in *Chakrabarty*:

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[23] Harm from declaring diagnostic method claims unpatentable is not limited to the loss of incentives for research and development. Rather, the diagnostics segment of the biotechnology industry – which industry in 2008 generated about $70 billion in revenues, employed 190,000 people, and had a market capitalization of more than $340 billion – could be seriously jeopardized. *See* Glen T. Giovannetti & G. Jaggi, Ernst & Young, *Beyond Borders – Global Biotechnology Report 2009*, p. 34G (2009). As discussed above, an affirmance here could cause numerous two-step diagnostic patents to be rendered void. At a minimum, companies holding those patents – and their investors and financial backers – would face uncertainty as to the value of their patents and the corresponding value of their businesses. It is unquestionable that a biotechnology company's value drops precipitously upon expiration of its patents, demonstrating the economic value afforded by patent protection. For example, in anticipation of the expiration of its patent on the cholesterol drug Zocor in June 2006, Merck announced in December 2005 that it expected sales of Zocor to drop from $4.35 billion in 2005 to $2.45 billion in 2006. *See Merck Plans More Cost-Cutting*, N.Y. TIMES, Dec. 16, 2005, at C5. In 2007, as a result of generic competition, Merck's sales of Zocor were only $877 million. *See* Gina-Louise Monari, *Pressure rises in cardio*, MedAd News, Feb. 2009, *available at* http://www.pharmalive.com/magazines/medad/view.cfm?articleID=7173. Any ruling that would render diagnostic method claims unpatentable would hasten such reduction of value for numerous companies, with devastating effects for the biotechnology industry.

> The choice we are urged to make is a matter of high policy for resolution within the legislative process after the kind of investigation, examination, and study that legislative bodies can provide and courts cannot. That process involves the balancing of competing values and interests, which in our democratic system is the business of elected representatives. Whatever their validity, the contentions now pressed on us should be addressed to the political branches of the Government, the Congress and the Executive, not to the courts.

447 U.S. at 317; *see Diehr*, 450 U.S. at 182.[24] In sum, any ruling in this case should not upset settled law and expectations concerning the scope of patentability.

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[24] Congress can and does amend the patent law when it finds that a change is in the public interest. For example, in 1996, Congress exempted certain medical activity from giving rise to infringement liability. 35 U.S.C. § 287(c) (added by Pub. L. No. 104-208, § 616, 110 Stat. 3009, 3009-67 (Sept. 30, 1996)).

CONCLUSION

The judgment of the Federal Circuit should be reversed insofar as it held the machine-or-transformation test to be the exclusive test for patentable subject matter in process claims.

Respectfully submitted,

GIDEON A. SCHOR
Counsel of Record
VERN NORVIEL
RAY AKHAVAN
1301 Avenue of the Americas,
40th Floor
New York, NY 10019
(212) 999-5800

Attorneys for Amicus Curiae
Caris Diagnostics, Inc.

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In the Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

DAVID J. KAPPOS, UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

AMICUS CURIAE BRIEF OF CENTER FOR ADVANCED STUDY AND RESEARCH IN INTELLECTUAL PROPERTY (CASRIP) OF THE UNIVERSITY OF WASHINGTON SCHOOL OF LAW, AND OF CASRIP RESEARCH AFFILIATE SCHOLARS, IN SUPPORT OF AFFIRMANCE OF THE JUDGMENT IN FAVOR OF RESPONDENT

TOSHIKO TAKENAKA
DIRECTOR
SEAN O'CONNOR
ASSOCIATE DIRECTOR
CENTER FOR ADVANCED
STUDY AND RESEARCH ON
INTELLECTUAL PROPERTY
(CASRIP)
University of Washington
School of Law
Seattle, WA 98195-3020

RICHARD H. STERN
Counsel of Record
KELLOGG, HUBER, HANSEN,
TODD, EVANS & FIGEL, PLLC
1615 M Street, N.W.
Suite 400
Washington, D.C. 20036
(202) 326-7900

Counsel for Amici CASRIP and CASRIP Research Affiliate Scholars

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INTEREST OF *AMICI CURIAE*[1]

The Center for Advanced Study and Research on Intellectual Property ("CASRIP") is an independent research and policy development institute affiliated with the University of Washington School of Law.[2] CASRIP focuses on problems involving patents and other intellectual property rights in technology. The UN's World Intellectual Property Organization recognizes CASRIP as an observing non-governmental organization.

CASRIP promotes discussion among intellectual property scholars and professionals, particularly those from countries with mature intellectual property systems, such as Japan, Europe, and the United States. CASRIP fosters discussion of differences in the intellectual property regimes of various countries and studies the impact of those differences on technological innovation and international trade.

CASRIP believes that an unlimited scope of patent eligibility for any human activity that can be described or claimed as a "process" both goes against the history, purposes, and common understandings of the U.S. patent system and is unconstitutional. CASRIP endorses the understanding that the words of 35 U.S.C. § 101 must be interpreted in light of the Constitution and that, accordingly, patent-eligible subject matter includes only those (i) processes and devices that fall within the "useful Arts," as the Constitution uses that term, and (ii) new practical applications of technological or artisanal activities that are of the same kind as and have evolved from the "useful Arts" as they were understood when the Constitution was drafted.

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[1] Pursuant to Supreme Court Rule 37.6, counsel for *amici* represents that it entirely authored this brief and no party, its counsel, or any other entity but *amici* and their counsel made a monetary contribution to fund the brief's preparation or submission. All parties have consented to the filing of this brief. Letters reflecting their consent are filed with the Clerk.

[2] The CASRIP Research Affiliate Scholars are described and listed *infra* App. B.

STATEMENT

The claimed invention

Petitioners ("Bilski") applied for a patent on a "process" for hedging financial risks attending the purchase or sale of commodities. Pet. 2a-3a. Such patents are commonly termed "business-method patents."

Representative claim 1 is for a three-step method for a broker to hedge risks for purchaser-users of a commodity input.[3] For example, an electric power plant might purchase coal from coal-mining companies and use it to make electricity. The power plant might seek to insulate itself from upward changes in coal prices by engaging in hedging transactions. The risk to the power plant can be quantified in terms of dollars (a "risk position"). Thus, if the purchaser needs 1,000 tons of coal in a given period, and the potential price spike is $10 per ton, the purchaser's total risk position for that period is 1,000 × $10, or $10,000.

The claimed process has, in substance, these steps:

(1) initiating a series of sales or options transactions between a broker and purchaser by which the purchaser buys the commodity at a first rate based on historical prices;

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[3] Claim 1 is the only claim in this appeal, because Bilski elected below to have all claims "stand or fall" with independent claim 1. Pet. 203a-204a.

(2) identifying producers of the commodity; and

(3) initiating a series of sales or options transactions between the broker and producers, at a second rate, such that the purchaser's and sellers' respective risk positions balance out.

In terms of the coal-using-power-plant example, the broker would enter into transactions for purchases and sales, each respective set deviating oppositely from historical levels approximately $10,000 in total over the relevant period, thus hedging the risk of price spikes. The broker presumably would negotiate prices that have a "spread" that provides the broker with a profit.

Proceedings below

The patent examiner, the PTO's appellate board, and the court of appeals (*en banc*) determined that the claims were not patent-eligible.[4]

The Federal Circuit, 11-1, sustained the PTO's rejection of the patent application. Nine judges concurred in the majority opinion, based on the "machine-or-transformation test."

The majority opinion characterized the issue as whether the claimed method is a patent-eligible *process*, as the patent statute (35 U.S.C. § 101) uses that term. While any series of actions is a *process* in the dictionary sense, the court of appeals explained, the statutory meaning is narrower. That "forecloses a purely literal reading." Pet. 7a.

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[4] Following the modern convention of courts and academic commentators, this brief uses the terms "patent-eligible" and "patent-ineligible" to refer to whether an item qualifies as potentially patentable subject matter under 35 U.S.C. § 101 and the U.S. Constitution. This brief reserves the term "patentable" and "unpatentable" to refer to whether a patent-eligible item meets the statutory requirements for patentability other than those in § 101—for example, the novelty requirement of § 102, the nonobviousness requirement of § 103, and the various formal requirements of § 112.

Patent-eligible processes do not include "laws of nature, natural phenomena, [or] abstract ideas." *Id.* That limiting legal rule applies not just to processes, but to anything on which a patent is sought.[5] As the trilogy of Supreme Court decisions on patent-eligibility from some three decades ago—*Gottschalk v. Benson*, 409 U.S. 63 (1972); *Parker v. Flook*, 437 U.S. 584 (1978); and *Diamond v. Diehr*, 450 U.S. 175 (1981)—had taught, this rule is necessary to prevent patents on abstract basic principles from tying up the basic tools of scientific and technological progress, and thus preempting technological advance. The Federal Circuit therefore saw its task as formulating a legal test that would prevent undesirable preemption and yet permit the rewards of the patent system to be extended to concrete, deserving technical advances. Pet. 8a-12a.

The Federal Circuit concluded that the prior decisions of this Court were of "limited usefulness" as guides, because they addressed polar cases on the abstraction and concreteness spectrum or involved "plainly corporeal industrial manufacturing process[es]." Pet. 12a. Nonetheless, a legal test could be distilled from them: "A claimed process is surely patent-eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing." *Id.* Not only did the patent-eligibility trilogy support this test, the Federal Circuit explained, but so too did earlier Supreme Court precedents dating back well into the Nineteenth Century. Pet. 13a-14a.

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[5] *See AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1357 (Fed. Cir. 1999) ("we consider the scope of § 101 to be the same regardless of the form—machine or process—in which a particular claim is drafted").

The court of appeals then concluded that this two-branch test, which it termed the "machine-or-transformation test," should be considered all-inclusive, that is, as stating indispensable conditions of patent-eligibility. It insisted that "the machine-or-transformation test is the only applicable test and must be applied, in light of the guidance provided by the Supreme Court and this court, when evaluating the patent-eligibility of process claims," even though the court of appeals recognized that much of the language in this Court's patent-eligibility trilogy was less sweeping. Pet. 15a-17a, 34a. The Federal Circuit placed no weight on the fact that the *Benson* Court had not accepted the Government's argument for an all-encompassing rule based on the machine-or-transformation test because the case law "cannot be rationalized otherwise."[6]

Applying the machine-or-transformation test to Bilski's claim, the Federal Circuit held it patent-ineligible. Bilski did not argue that the rejected claim recited any "particular machine," so that the court found it unnecessary to decide any issues relating to the machine-implementation branch of the test. "We leave to future cases the elaboration of the precise contours of machine implementation, as well as the answers to particular questions, such as whether or when recitation of a computer suffices to tie a process claim to a particular machine." Pet. 28a. The court then turned to transformation of articles from one thing or state to another, and to determining what is an "article." Options, futures contracts, and business risks were not articles, as the case law had understood that concept, and accordingly Bilski's claim entirely failed the machine-or-transformation test. Pet. 32a.

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[6] *See* Petitioner's Reply Brief at 9, *Gottschalk v. Benson*, *supra* (No. 71-485).

Judge Mayer agreed with the judgment of patent-ineligibility but "dissented," primarily on the ground that business-method patents are unconstitutional, or the patent statute must be interpreted not to extend to them in order to avoid constitutionality problems. He maintained (Pet. 106a):

> The patent system is intended to protect and promote advances in science and technology, not ideas about how to structure commercial transactions. Claim 1 of the application ... is not eligible for patent protection because it is directed to a method of conducting business. Affording patent protection to business methods lacks constitutional and statutory support, serves to hinder rather than promote innovation and usurps that which rightfully belongs in the public domain.

Pointing to the Statute of Monopolies and the public hostility to the English "odious monopolies," Judge Mayer concluded that, when Congress enacted the first patent statute (in language substantially unchanged to this day in regard to patent-eligibility), it specifically opposed allowing patents on methods of conducting trade. Pet. 106a-107a.

Judge Dyk, joined by Judge Linn, concurred in the majority opinion upholding the PTO's rejection of Bilski's patent, but concurred also in Judge Mayer's historical analysis that the framers of the Constitution intended to exclude from the U.S. patent system "methods for organizing human activity that do not involve manufactures, machines, or compositions of matter." Pet. 54a.

Finally, Judge Rader agreed that Bilski's claim was patent-ineligible but "dissented" on the ground that the majority should simply have said that "Bilski claims merely an abstract idea," while Judge Newman dissented on the ground that Bilski's claim should have been allowed. Pet. 134a, 60a.

SUMMARY OF ARGUMENT

I. A. The Constitution's Patent Clause limits congressional power to issue patents to Discoveries of Inventors that are within the useful Arts. Therefore, this Court must find a way to determine whether given human activities are within (or without) the useful Arts and thus what are (or are not) the useful Arts.

B. The common understanding of what the useful Arts were, at the time of adoption of the Patent Clause, is highly material, and contemporary dictionaries and literary usage aid in discerning that. The colonial patents provide another important clue to what were considered useful Arts in the Eighteenth Century. The monopolies "backdrop" of the Patent Clause also provides a clue, illuminating what the drafters of the Patent Clause were opposed to having patented.

These sources equate the useful Arts with the activities of artisans. They exclude those arts and activities that in the Eighteenth Century were considered not within the useful Arts—for example, the liberal arts, literary arts, and non-arts activities, such as engaging in a profession or, notably, engaging in commerce or business—for those in trade are not artisans.

II. The machine-or-transformation test permits some machine-implemented processes to be patented, even though they are not within the useful Arts—for example, laser-implemented cat-exercise and mechanized slapstick. The machine-or-transformation test therefore cannot be complete, even though needed to prevent preemption of basic principles.

Moreover, some processes (typically low-technology) are historically considered in the useful Arts but do not pass the machine-or-transformation test. Yet, they need not do so because they are purely empirical—non-theoretical—lacking any known underlying basic principle that they implement and therefore could preempt. The machine-or-transformation test should be reserved for excluding expedients that implement basic principles and thus risk preempting them.

Some processes fail the machine-or-transformation test because, although now technologically infeasible, future advances in technology may change that. Therefore, as *Benson* suggests, a less absolute rule is preferable—a rebuttable presumption of patent-ineligibility. It is more prudent to follow *Benson* and leave the door open to rebutting that presumption for advances that fail the machine-or-transformation test.

III. Proposed tests other than the machine-or-transformation test are even more problematic as tools for filtering out patents preempting basic principles. Despite its incompleteness, the machine-or-transformation test is superior to its competitors in this regard. It merely needs to be supplemented.

IV. Congress did not endorse business-method patents by enacting the "prior user" personal-defense statute. In any case, as part of the Constitution, the

Patent Clause is the supreme law of the land, and it does not authorize patents on business expedients.

V. Bilski's claim is patent-ineligible because it fails both the useful Arts and machine-or-transformation tests. The judgment in this case can properly be rested solely on the useful-Arts requirement, however, and cannot as effectively be rested solely on the machine-or-transformation requirement. Arguably, Bilski did not receive sufficient notice below that he must rebut the presumption of patent-ineligibility arising from noncompliance with the machine-or-transformation test. If so, fairness requires a remand to provide that opportunity. But no remand is needed to justify rejecting Bilski's claim under the useful-Arts requirement, for the Constitution and therefore the statute, properly interpreted, will not permit grant of a patent monopoly outside the useful Arts.

ARGUMENT

I. THE CONSTITUTION'S PATENT CLAUSE GUIDES INTERPRETATION OF § 101

A. The Constitution Limits the Patent Power

As Judges Mayer, Dyk, and Linn insisted below, the word "process" in § 101 must be interpreted in the light of its use in the Constitution. That the Patent Clause—Article I, § 8, clause 8—acts as a limitation on, as well as a grant of, congressional power to legislate about patents is settled since *Graham v. John Deere Co.*, 383 U.S. 1, 5-6 (1966) ("The Congress in the exercise of the patent power may not overreach the restraints imposed by the stated constitutional purpose.... This is the standard expressed in the Constitution and it may not be ignored."); *accord Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 146 (1989).

The Constitution's Patent Clause states, in pertinent part, that Congress shall have Power to promote the Progress of useful Arts, by securing to Inventors the exclusive Right to their respective Discoveries. Accordingly, just as *Graham* instructs that "obvious" in § 103 must be interpreted with "reference to a standard written into the Constitution," 383 U.S. at 6,[7] so too must "process" in § 101 be interpreted with reference to the Constitution's congressional-power limitation to patenting "Discoveries of Inventors" that are within the "useful Arts."[8]

Congress may no more authorize patents on things that are not Discoveries of Inventors, within the useful Arts, than it can enact non-uniform bankruptcy laws under the Bankruptcy Clause, *see Railway Labor Executives' Ass'n v. Gibbons*, 455 U.S. 457 (1982) (striking down non-uniform bankruptcy law); or use its power under the Copyright Clause to protect material not "the fruits of intellectual labor," *The Trademark Cases*, 100 U.S. 82, 94 (1879), or "raw facts," *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 344-45, 350 (1991).[9] Thus, a patent on a process for making or doing something not within the useful Arts exceeds Congress's enumerated powers,[10] and § 101 should be interpreted to avoid that result.

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[7] The *Graham* Court held that the Constitution's limitation of patent protection to *Discoveries* (i.e., *inventions*) of *Inventors*—thereby excluding slight technological advances resulting from merely routine artisanship—dictated the meaning of the patent statute's "non-obviousness" requirement. *See also KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 427 (2007) ("[T]he results of ordinary innovation are not the subject of exclusive rights under the patent laws. Were it otherwise patents might stifle, rather than promote, the progress of useful arts. These premises led to the bar on patents claiming obvious subject matter[.]").

[8] Moreover, § 101 authorizes patent grants only to those who "invent" something. Section 1 of the Patent Act of 1790, ch. 7, 1 Stat. 109, used similar language.

[9] The legal principle can be expressed in terms of the phrase "Discoveries of Inventors" or the phrase "useful Arts," or both.

The machine-or-transformation test adequately performs its intended function—to filter out and reject claims to "laws of nature, natural phenomena, [or] abstract ideas"[11] (collectively, hereinafter, "basic principles"). But that is not enough. Other things besides basic principles are patent-ineligible, because they are outside the useful Arts,[12] and a proper legal rule must exclude them too, even when they are machine-implemented. Because the Federal Circuit has not taken that requirement into account, its insistence that the machine-or-transformation test is the "only applicable test"[13] has led it into an errone-

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The two phrases are different ways of describing essentially the same limitation: any Discovery of an Inventor that is not within the useful Arts is not the kind of Discovery that the Patent Clause registers. *See Flook*, 437 U.S. at 593 ("The rule that the discovery of a law of nature cannot be patented rests not on the notion that natural phenomena are not processes, but rather on the more fundamental understanding that they are not the kind of 'discoveries' that the statute was enacted to protect."). For brevity and to avoid repetition, the term "useful-Arts limitation" will hereinafter refer collectively to these terms of limitation in the Patent Clause.

[10] *See United States v. Morrison*, 529 U.S. 598, 607 (2000).

[11] *See Benson*, 409 U.S. at 67; *Flook*, 437 U.S. at 589; *Diehr*, 450 U.S. at 185.

[12] Arguably, basic principles are not Discoveries within the useful Arts, *see Flook*, *supra* note 9, but the machine-or-transformation test is nonetheless incomplete because still other things are outside the useful Arts. *See infra* Part II.

[13] *See also In re Ferguson*, 558 F.3d 1359, 1364-65 (Fed. Cir. 2009) (machine-or-transformation test is "the 'sole,' 'definitive,' 'applicable,' 'governing,' and 'proper' test ... under § 101").

ous, or at least incomplete, statement of the law, which this Court should correct.

To ensure faithfulness to the constitutional mandate, this Court must find a way to determine whether given human activities are within (or without) the useful Arts and therefore what are (or are not) the useful Arts. The term is *not* self-defining.[14]

B. Determining What Are the Useful Arts Can Best Be Accomplished by Looking, in the First Instance, to What Were Considered Useful Arts in the Eighteenth Century and Also to the Monopolies "Backdrop" of the Patent Clause

The clues to ascertaining what is within the useful Arts, and thus to properly interpreting § 101, are found by examining usage in Eighteenth Century texts, the "monopolies backdrop" of the Patent Clause,[15] and the kind of patents issued under the pre-Constitution colonial patent systems. Those are the most reliable pointers to the framers' understanding of the constitutional term "useful Arts."

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[14] Thus, "useful Arts" is not simply the combination or sum of "useful" plus "arts," any more than "due process" is simply the sum of "due" and "process" or "blue sky law" is the sum of its parts. The useful Arts are only a subset of arts that are useful. (As used hereinafter, "useful" when not followed by "Arts" refers to the contemporary dictionary sense of the word.)

Although a useful Art must be useful, many things are useful that are not within the useful Arts. The art of fencing is useful, for example, but the Eighteenth Century classified it among the martial arts, *not* the useful Arts. Ovid's *Ars Amatoria* provides another example of an art that is useful but is not within the useful Arts.

[15] *See Graham*, 383 U.S. at 6.

1. Usage in Texts Around 1789

To make a proper textual analysis, one must ascertain what the Constitution's phrase "useful Arts" meant in and around 1789.[16] Only those dictionaries published in the Eighteenth Century or perhaps shortly later are useful.[17] They speak very tersely, however, particularly in regard to the distinction between useful Arts and other arts. Neither Samuel Johnson nor Noah Webster explicitly defined "useful arts," but both give processes as examples when defining *art*: Johnson mentions "making sugar"; Webster, "building or engraving" and "making clothes and utensils."[18] Moreover, in defining *art*, Webster distinguishes *useful* (also termed *mechanic*) arts from *liberal* (also termed *polite*) arts:

> Arts are divided into useful or mechanic, and liberal or polite. The mechanic arts are those in which the hands and body are more concerned than the mind; as in making clothes and utensils. These arts are called trades. The liberal or polite arts are those in which the mind or imagination is chiefly concerned; as poetry, music and painting.

Webster's "mechanic" concept clearly excludes engaging in buying, selling, and other business and commerce.

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[16] For a similar approach in another patent context, see *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 376-82 (1996) (looking to practice in and preceding Eighteenth Century to determine whether judge or jury should interpret claims).

[17] *See Smiley v. Citibank (S.D.), N.A.*, 517 U.S. 735, 745 (1996) (using dictionaries from time of statutory enactment).

[18] SAMUEL JOHNSON, A DICTIONARY OF THE ENGLISH LANGUAGE (6th ed. 1785); NOAH WEBSTER, AMERICAN DICTIONARY OF THE ENGLISH LANGUAGE (1st ed. 1828).

Contemporary literary sources are to the same effect. George Washington, for example, explicitly distinguished commerce from useful arts.[19] Other contemporaneous literary sources describe the useful arts in terms of manufactures, consistently with Johnson's and Webster's definitions.[20] Eighteenth Century usage clearly does *not* include engaging in commerce or business as within the useful Arts.

2. Patents Issued in the Eighteenth Century

Examination of the kinds of patents issued near and preceding 1789 provides a practical understanding of how contemporaries of the drafters of the Patent Clause viewed patent-eligibility. The first two patents that issued under the first federal patent statute[21] were on manufacturing processes—potash-making and candle-making.[22] Earlier colonial patents were for similar processes, e.g., methods of salt-making and iron-to-steel conversion; and for processing and manufacturing machines, e.g., rice-cleaning and scythe-making.[23] Yet, it is not clear that the useful Arts were strictly limited to manufacturing processes, for related processes also appear to have been recognized—for example, ways to sharpen a knife, scissors, scythe, or plow.[24]

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[19] In a January 29, 1789 letter to Lafayette, Washington distinguished commerce from useful Arts, stating, "While our commerce has been considerably curtailed ...; the useful arts have been almost imperceptibly pushed to a considerable degree of perfection." 30 THE WRITINGS OF GEORGE WASHINGTON FROM THE ORIGINAL MANUSCRIPT SOURCES, 1745-1799 (Fitzpatrick ed., 1939).

[20] *See* Kenrick, *An Address to the Artists and Manufacturers of Great Britain* (1774) (contrasting the "useful Arts" with the "polite arts"); Coxe, *An Address to an Assembly of the Friends of American Manufactures, in Calling for More Domestic Manufacturing* 17-18 (1787) (describing useful Arts in terms of manufactures); Logan, *A Letter to the Citizens of Pennsylvania, on the Necessity of Promoting Agriculture, Manufactures, and the Useful Arts* 12-13 (1800) (describing useful Arts in terms of manufacturing processes).

[21] Patent Act of 1790, ch. 7, § 1, 1 Stat. 109 (authorizing patents on "any useful art, manufacture, engine, machine, or device, or any improvement therein").

[22] The first United States patent, granted to Samuel Hopkins (No. X1, issued July 31, 1790), was on a method of making potash. The next patent (No. X2, Aug. 6, 1790) issued to Joseph

But methods of doing business were not patented, federally or colonially,[25] although the Eighteenth

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Sampson on a method of making candles. The only other 1790 patent (No. X3, Dec. 18) issued to Oliver Evans for flour-milling machinery. *See* THOMPSON, AGE OF INVENTION 28-29 (1921). No early patents were on business methods.

[23] *See* CLARK, HISTORY OF MANUFACTURES IN THE UNITED STATES 48-50 (1916); 1 BISHOP, HISTORY OF AMERICAN MANUFACTURES 476 (3d ed. 1868).

[24] *See, e.g., Hovey v. Stevens*, 12 F. Cas. 615 (C.C.D. Mass. 1846) (suit for infringement of 1845 patent on sharpening knives). Petitioners misstate history, however, when they insist that "the U.S. patent system has long embraced nonmanufacturing methods" and suggest that Congress granted a patent on "methods by which the principles of magnetic variation are ... explained" (Pet. Br. 50-51). Despite the kind words, Congress did *not* grant Churchman a patent or even a subsidy. DUPREE, SCIENCE IN THE FEDERAL GOVERNMENT: A HISTORY OF POLICIES AND ACTIVITIES 9-11 (1980). Moreover, the Statute of Monopolies authorized patents only for the "working or making of any manner of new manufactures."

[25] *See In re Comiskey*, 554 F.3d 967, 976-77 (Fed. Cir. 2009) (the framers "consciously acted to bar Congress from granting letters patent in particular types of business"); *id.* at 980 ("It is thus clear that the present statute does not allow patents to be issued on particular business systems ... a field of endeavor that both the framers and Congress intended to be beyond the reach of patentable subject matter."); Pollack, *The Multiple Unconstitutionality of Business Method Patents: Common Sense, Congressional Consideration, and Constitutional History*, 28 RUTGERS COMPUTER & TECH. L.J. 61, 90 (2002); Ochoa & Rose,

Century did not lack innovative business schemes.[26] That they were not patented evidences a common understanding that they were patent-ineligible.

3. The Monopolies "Backdrop"

The "backdrop of the practices" that led to the passage of the Statute of Monopolies and ultimately to the Patent Clause itself and its built-in restraints on power further aids understanding what the drafters of the Patent Clause meant to be patent-eligible. *See Graham*, 383 U.S. at 5-6. The monopolies "backdrop" illuminates what the framers believed should *not* be the subject of exclusive patent rights. *Id.* The East India Company's tea monopoly, which had led to the Boston Tea Party a few years earlier, is one example of what is not within the patent-eligible useful Arts. The Company did not invent or discover an improved way to *process* tea, for which it was awarded a patent monopoly; the Crown simply favored the Company with a royal monopoly grant over *trading* with the American Colonies—a franchise to mulct the colonists by extracting monopoly rent from them, to enrich Company shareholders.

The Anti-Monopoly Origins of the Patent & Copyright Clause, 49 J. COPYRIGHT SOC'Y 675, 693-95 (2002).

[26] *See* Pet. 107a-108a (Mayer, J., dissenting); Pollack, *supra*, at 106-08. Innovative Eighteenth Century business schemes included the 1719 South Sea Bubble (transformation of high-interest but difficult-to-trade debt into low-interest, readily marketable debt and shares of South Sea Company); the 1720 Mississippi Company Bubble (similar debt-for-shares scheme, with shares collateralized by expected gains from monopoly on trading rights with French colonies); the Scottish Presbyterian Church's 1744 introduction of actuarially-based, premium-life insurance; and Benjamin Franklin's 1752 founding of a property-insurance company.

Darcy v. Allen, 11 Co. Rep. 84b, 77 Eng. Rep. 1260 (K.B. 1603), provides another negative illustration. Darcy did not receive a patent for inventing an improved way to *manufacture* playing cards; his patent gave him the exclusive right to *sell* playing cards, as a royal favor from the Queen,[27] again a franchise to mulct the public by extracting monopoly rent from it. Neither engaging in trading with the Colonies nor the exclusive right to sell playing cards is a useful Art; both are paradigmatic examples of things *not* useful Arts—things the framers intended to exclude from any federal system granting exclusionary rights. Just as the catalog of artisanal arts informs us what are useful Arts, the catalog of odious monopolies helps inform us what are not useful Arts.[28] Legal history thus informs courts of practices that should be considered outside the useful Arts and patent-ineligible.

Accordingly, the monopolies backdrop of the Patent Clause indicates the framers' disfavor toward any state grant of a monopoly on a kind of trading, as contrasted with a way to make the articles that become the subject of trading—*selling* playing cards, for example, as contrasted with means for *making* them.[29]

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[27] *See Sears, Roebuck & Co. v. Stiffel Co.*, 376 U.S. 225, 229 (1964).

[28] An extensive list of odious monopolies is found in DAVID HUME, HISTORY OF ENGLAND ch. 44, at 458 (1810 ed.). Another part of the *Graham* "backdrop" is the set of practices that common-law courts regarded as having pernicious effects similar to those of monopolies and therefore similarly abhorred and condemned (e.g., engrossing—preempting the sale of goods or securing a monopoly of their sale). *See Standard Oil Co. v. United States*, 221 U.S. 1, 53-54 (1911). The Boston Tea Party, which *Graham* singles out, was a response to engrossing. *See id.*

C. Conclusions from Textual Analysis

The available texts illuminate largely what are *not* useful Arts. The subtlety of the issue, and the competing policies at stake, make "useful Arts" not amenable to a pithy definition. Definition by enumeration or description, however, is feasible.

Thus, useful Arts are what practical artisans or mechanics do. It is possible to make that more specific. Textual analysis lets us infer several things about the useful Arts. First, some arts categories are mutually exclusive—notably (as Noah Webster said) "useful or mechanic," on the one hand, and "liberal or polite," on the other. What is in the liberal arts[30] cannot be in the useful Arts. Other arts categories exist that, like the liberal arts, are excluded from the useful Arts: e.g., performing arts,[31] literary arts,[32] and martial arts.[33] Things in these arts were not within the useful Arts. Practice of the learned professions (such as law and clergy) was also outside the useful Arts.

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[29] This may require fine distinctions. Making steel or shoes is within the useful Arts, but engaging in the business of selling steel or shoes is not within the useful Arts. A trader is not an artisan. Noah Webster defined a *trader* as "[o]ne engaged in trade or commerce; a dealer in buying and selling or barter."

[30] Classically, the seven so-called liberal arts were arithmetic, geometry, music, astronomy, grammar, rhetoric, and logic.

[31] Performing arts include performance of music, drama (including tragedy and comedy), and dance.

[32] Literary arts include composition of poetry (as distinguished from its recitation or performance).

[33] Martial arts include boxing, wrestling, and fencing.

It is thus possible to make two lists—a catalog of arts clearly recognized in and around 1789 as useful Arts[34] and one of arts and other human endeavors clearly then recognized as *not* within the useful Arts—because the members of each list were deemed to be in mutually exclusive arts categories.

It is also possible to determine what is akin to, and thus appropriately added to, the members of each list. The two lists will aid a court in making the legal determination whether a given claimed process in a new art is patent-eligible under the useful-Arts test. Courts will recognize from the history of their development those arts derived from the useful Arts known around 1789. Thus, interpreting the statute in the light of the Constitution does not compel courts to freeze the concept of promotion of the progress of the useful Arts by excluding new categories of artisanal inventions. *Graham*'s command that § 103 must be interpreted in the light of the Constitution did not have that effect, and there is no reason to assume any different result for § 101.

Correct application of that principle, at times proceeding incrementally through intermediate arts, should sweep up artisanal advances, because that is how technology itself and the useful Arts actually develop: they build accretionally on earlier developments. *See KSR*, 550 U.S. at 427 ("advances, once

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[34] A partial list follows of arts clearly recognized as within the useful Arts in and around 1789: brick-making, manufacture of ceramics and silica-based products (including glass, porcelain, pottery, tiles), milling, shoemaking, smelting of metals, tanning, the arts of many kinds of smith (e.g., blacksmith, goldsmith, silversmith, tinsmith), many textile-related arts (e.g., cloth-making, dyeing, fulling). *See, e.g.*, BIGELOW, ELEMENTS OF TECHNOLOGY (2d ed. 1831) (lectures on application of science to the useful Arts).

[they are] part of our shared knowledge, define a new threshold from which innovation starts once more … [and] progress begin[s] from higher levels of achievement"). For example, integrated circuits are akin to and use the knowledge of the ceramics and silica-products arts known in 1789, such as glass-making and porcelain-making. The manufacture of automobiles is an outgrowth or development of, and akin to, the wagon-making art.[35] Difficulties in applying the incremental approach may exist, but they are not insurmountable, and that approach has the advantage of being more principled than the alternatives.

Most important for this case, however, even if there are difficulties at the boundary in determining whether particular arts *are* within the useful Arts and therefore whether particular advances are patent-eligible, no difficulty extends to this case. Buying, selling, and otherwise engaging in business or commerce—even if in manufactures—were not considered arts and were not understood as among the useful Arts. Dictionaries and literary texts support the view that engaging in trade was not within the useful Arts. Moreover, the evidence from the "backdrop" suggests a strong antipathy to allowing monopolies on types of trading—an antipathy that led to the Boston Tea Party and was a factor in causing the Revolution.[36]

In sum, business is not a useful Art. Methods of engaging in commerce were not recognized as useful Arts in 1789.

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[35] *See also* BARBER, STORY OF THE AUTOMOBILE 58-59 (1917) (1787 Maryland patent on steam-propelled horseless-carriage).

[36] *Graham*, 383 U.S. at 7 ("[i]t was a monopoly on tea that sparked the Revolution").

II. THE MACHINE-OR-TRANSFORMATION TEST USED ALONE IS USUALLY CORRECT, BUT SOMETIMES IS OVER- OR UNDER-INCLUSIVE

As previously stated, the Federal Circuit's insistence that the machine-or-transformation test is the "only applicable test" has led it into an erroneous, or at least incomplete, statement of the law, which this Court should correct. That test requires some qualification, because its application sometimes leads to error. The machine-or-transformation test has been erroneously regarded as a two-way street—a necessary and sufficient condition of patent-eligibility.

Problems with each direction of that street show that the machine-or-transformation test needs to be supplemented by a further test, for the test leads to false positives and even some false negatives. A more reliable approach is to use the useful-Arts test, first, and then (if the first test is met) the machine-or-transformation test. (The reason is that, as will be shown, a process can pass the machine-or-transformation test and yet be outside the useful Arts.) Moreover, the machine-or-transformation test should create only a rebuttable presumption of patent-ineligibility for processes that cannot satisfy the test.

A. Background of the "Only Applicable Test" Controversy

The Government distilled and first articulated the machine-or-transformation test in its briefs in *Benson*, on the basis of its review of all earlier patent decisions of this Court involving processes. Based on that sample, it argued:

> Though the *Morse* case and *The Telephone Cases* do not state the rule, in so many words, that patents on processes which do not involve the

> manipulation and transformation of physical materials from one physical or chemical state into another, must contain limitations confining the monopoly grant to the practice of the method by means of particular types of apparatus, we submit that the cases follow such a rule—implicitly or explicitly—and that they cannot be rationalized otherwise.[37]

This Court expressly reserved the point, however, even though it recognized that all its prior decisions had met the test's requirements:

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a "different state or thing." We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.[38]

Amici submit that the proper rule, which this Court should follow, subject to further qualifications explained in this section, is a rebuttable presumption of patent-ineligibility for claimed inventions that fail the machine-or-transformation test.[39] In other words, go no farther than *Benson* and its progeny—leave the door open to rebuttal. Like Newtonian, pre-relativity, pre-quantum physics, the machine-or-transformation test works for most practical cases, and thus most of the time, but some fact patterns falsify its predicted results. The machine-or-transformation test should not be the "only applicable test" to determine whether processes are patent-eligible.

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[37] *See* Petitioner's Reply Brief at 9, *Gottschalk v. Benson*, *supra* (No. 71-485).

[38] *Benson*, 409 U.S. at 71; *see also Flook*, 437 U.S. at 588 n.9 ("An argument can be made, however, that this Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a 'different state or thing.' As in *Benson*, we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents.").

[39] *Amici* use the Federal Circuit's designation "machine-or-transformation test," but it must be recognized that this terminology is imprecise. The process-implementing-device limitation need not be a machine to protect the public from patents on basic principles. The device may be an article of manufacture, as

B. False Positives

The following are examples of processes that satisfy the machine-or-transformation test but are nonetheless patent-ineligible, because they are not within the useful Arts.

A prime example of such a process is a method for entertaining a cat by using a laser beam (relatively high technology). *See* U.S. Pat. No. 6,701,872 (reproduced *infra* App. A). The method is implemented with a "particular machine"—"a rotating laser source mounted directly on a shaft driven directly by a motor mounted on a portable pedestal" (method claim

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in *Funk Brothers Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127 (1948) (a package); or a composition of matter, as in *Armour Pharmaceutical Co. v. Richardson-Merrell, Inc.*, 396 F.2d 70, 74 (3d Cir. 1968) (acid-resistant coating). Moreover, to avoid preemption of basic principles, the implementing device must not be just *any* "particular device": as *Flook* instructs, *see* 437 U.S. at 584, the device must not be concededly old or uncreative on its face. *See also Funk*, 333 U.S. at 132 (making package of mixed inoculants is so trivial and uncreative a step from discovery of natural principle that allowing patent on package is tantamount to allowing patent on natural principle); *Rubber-Tip Pencil Co. v. Howard*, 87 U.S. (20 Wall.) 498, 507 (1874) (because everybody knows that rubber clings to solid inserted into cavity in the rubber, claiming this as eraser is implementation at so trivial a remove from the idea that patent is on the idea). On device-implementation, *see generally* Wikipedia, "Machine-or-transformation test."

14). Entertaining a cat has never been considered a useful Art, and surely this "discovery" is not the kind of discovery that the Patent Clause contemplates.

Another example is the process of Kafka's *In the Penal Colony*. A machine cuts into the skin of culprits words appropriate to crimes they committed (e.g., "Obey your superiors!"), and the process continues until they expire. Treating Kafka's story as the specification for a patent application, the (notionally) claimed subject matter is: a process for imposing on a culprit a punishment that fits a crime that the culprit committed.[40] The machine is a "particular machine" to which the process is tied. But a process for imposing "a punishment that fits the crime" is not within the useful Arts. The process meets the machine-or-transformation test requirements, but the function of the process (making the punishment fit the crime) is outside the useful Arts, and promoting accomplishment of that function does not promote progress of useful Arts.[41]

Other examples of machine-implemented patent-ineligible processes are readily provided:

> *A process for making a roomful of people laugh, comprising providing a microphone coupled to an amplifier, said amplifier coupled to at least one loudspeaker; and speaking into said microphone*

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[40] Claims and a discussion of the device are found in Stern, *Being Within the Useful Arts as a Further Constitutional Requirement for US Patent-Eligibility*, [2009] EUR. INTELL. PROP. REV. 6, 11.

[41] The present process-patent case does not directly present the question of the patent-eligibility of a *machine* whose purpose and function are not within the useful Arts. As the Federal Circuit has properly pointed out, however, the same patent-eligibility standards apply to processes and machines. *See Excel Communications*, 172 F.3d at 1357-58.

to tell the people anecdotes beginning, "Take my wife, please."

Or the entertainment process performed by a machine adapted for hitting people in the face with custard pies. Still another example is a tax-avoidance scheme carried out by means of a programmed general-purpose digital computer.[42] Or a method of spreading good karma by encoding a mantra on a computer's hard-disk acting as a prayer wheel, and causing the disk to spin by operating the computer.[43] Every example of a false positive, here, is patent-ineligible only because not within the useful Arts.

It is manifest, therefore, that the machine-or-transformation test is incomplete—incapable of excluding some processes (and devices) that are patent-ineligible. A preliminary or threshold test based on the constitutional, useful-Arts requirements for patent-eligibility must precede use of the machine-or-transformation test. The tests have different functions—one weeds out overly broad and abstract claims that preempt basic principles, while the other weeds out things that are excluded from the patent system because of their nature (field of endeavor). Thus, both kinds of test are needed.[44]

C. False Negatives

Some processes—typically old, low-technology, and non-theoretical—use no machine and cause no transformation. They nonetheless are within the useful

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[42] *See State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998).

[43] *See generally* Wikipedia, "Prayer wheel."

[44] Arguably, basic principles are neither *Arts* nor *Discoveries of Inventors*. But the basic-principle and type-of-art inquiries require quite different kinds of analysis. Tests for each are therefore still needed.

Arts or are akin to them, are not preemptive, and thus contradict the machine-or-transformation test.[45]

A paradigmatic example is: *cleaning a dirty shirt by submerging it in a river and beating it.* There is no "particular machine" and no obvious example of a transformation of an article.[46] Similar processes illustrate the principle.[47]

Or consider this low-technology process:

> *A method for operating a coal mine where a toxic gas may be present, comprising placing a canary in the mine, observing it, and running away fast if it dies.*

Inventions often occur in fields where the underlying principle of the invention is not understood because of the inventor's lack of knowledge or a then-current primitive stage of knowledge. For example, Goodyear had no knowledge that rubber polymers cross-link when heated in the presence of sulfur. He just knew that the rubber became harder and elastic. Given the state of knowledge in 1840, the invention was purely empirical.

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[45] These examples are patent-eligible but anticipated, because old. The issue in *Bilski*, however, is solely patent-eligibility.

[46] Clean or dirty, the shirt remains a shirt. *See American Fruit Growers, Inc. v. Brogdex Co.*, 283 U.S. 1 (1931), in which this Court held that impregnating the rind of an orange with borax to prevent decay did not transform the orange: "Addition of borax to the rind of natural fruit does not produce from the raw material an article for use which possesses a new or distinctive form, quality, or property.... There is no change in the ... general character of the fruit. It remains a fresh orange, fit only for the same beneficial uses as theretofore." *Id.* at 11-12; *see also id.* at 13 ("There must be transformation; a new and different article must emerge having a distinctive name, character, or use.").

[47] For example: *removing wrinkles from a garment by hanging it overnight in a hot and humid place.* Consider, also, the original of the expedient used in *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273 (1976). *See id.* at 275 n.1 (cleaning a stable by diverting a stream to flow through it).

Useful Arts like that of the dirty-shirt paradigm are purely empirical and non-theoretical, but Congress has never chosen to narrow the patent-eligible useful Arts to only those scientifically explainable.[48] A proper test of patent-eligibility must therefore accommodate empirical discoveries as well as scientific ones. Such processes are not necessarily transformative and can be such low-technology that they use *no* machine, much less a *particular* machine. The machine-or-transformation test is neither necessary nor suited to claims to purely empirical processes, because there is no currently known underlying basic principle that the claim could preempt.

D. Now-Infeasible or Impossible Processes and Future Technology

Finally, hypothetical examples can be posited of processes that do not meet the requirements of the machine-or-transformation test, are directed to patent-eligible subject matter, yet are infeasible or deemed impossible under currently available technology. Nonetheless, advances in technology may occur that make such processes realities.

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[48] *Diamond Rubber Co. v. Consolidated Rubber Tire Co.*, 220 U.S. 428, 435-36 (1911) ("A patentee may be baldly empirical, seeing nothing beyond his experiments and the result; yet if he has added a new and valuable article to the world's utilities, he is entitled to the rank and protection of an inventor.... It is certainly not necessary that he understand or be able to state the scientific principles underlying his invention[.]"); *accord In re Cortright*, 165 F.3d 1353, 1359 (Fed. Cir. 1999) (PTO "erred in suggesting that [inventor of baldness cure] was required to prove the cause of the resultant hair growth"); *Fromson v. Advance Offset Plate, Inc.*, 720 F.2d 1565, 1570 (Fed. Cir. 1983) ("[I]t is axiomatic that an inventor need not comprehend the scientific principles on which the practical effectiveness of his invention rests.").

Consider, for example, a room having a hole in the wall. The room is cooled by a process that sends air molecules moving faster than average out of the room through the hole, decreasing the average speed of air molecules in the room, thereby cooling it. Implementing the process is currently deemed impossible.[49]

Such now-infeasible notional processes suggest adoption of *Benson*'s caution in declining to "hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents." 409 U.S. at 71.

E. Conclusions from Limitations of Machine-or-Transformation Test

The machine-or-transformation test succeeds in filtering out claims to applications of basic principles claimed too broadly or in such trivial or conventional implementations that the claim preempts the basic principle. But even claims that pass the machine-or-transformation test can be on devices outside the useful Arts (*supra* Part II.B) and therefore patent-ineligible. Moreover, some useful Arts are purely empirical and non-theoretical (*supra* Part II.C). Therefore, the machine-or-transformation test is neither universally necessary nor sufficient for patent-eligibility. But it can properly be viewed as creating a rebuttable presumption, as *Benson* suggests.

Accordingly, at least two patent-eligibility tests are needed. First, being within the useful Arts is a *sine qua non*. Second, those useful-Arts advances implementing a known basic principle, which therefore could (but must not) preempt it, must also pass the machine-or-transformation test.

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[49] *See generally* Wikipedia, "Maxwell's demon."

III. OTHER TESTS PROPOSED SO FAR ARE EVEN MORE PROBLEMATIC THAN THE MACHINE-OR-TRANSFORMATION TEST

The principal rivals proposed as substitutes for the machine-or-transformation test are the Federal Circuit's now-discarded "useful, concrete, and tangible" test (which petitioners seek to revive under the name "practical-application" test, *see* Pet. Br. 52-59) and the "technological-arts" test.

A. The useful-concrete-tangible test can be rejected out of hand for the reasons stated in the dissenting opinion of Justice Breyer in *Laboratory Corp. v. Metabolite Laboratories, Inc.*, 548 U.S. 124, 136-37 (2006) ("[T]his Court has never made such a statement and, if taken literally, the statement would cover instances where this Court has held the contrary.") (citing *O'Reilly v. Morse*, 56 U.S. (15 How.) 62 (1854); *Flook*; and *Benson*).

Petitioners and some *amici* would resurrect this test, renamed the "practical-application" or "abstract/applied" test. They propose that courts should go, without intermediate analytic mechanisms, directly to the ultimate purpose of the machine-or-transformation test, which is to filter out preemptive claims to basic principles. The court (or PTO) simply decides directly whether the claim is to a practical application of a basic principle or to the basic principle as such. No conceptual tool (like the machine-or-transformation test) or other criterion is proposed for making the determination, for it is assumed (without support) that we always "know it when [we] see it," *cf. Jacobellis v. Ohio*, 378 U.S. 184, 197 (1964)

(Stewart, J., concurring), whether a practical application or an abstract idea as such is claimed.

But *Flook* has already exposed the fallacy of this approach. Any patent drafter can add "practical" activity to a claim on a basic principle. Under the proposed abstract/applied test, adding to a claim to the Pythagorean Theorem, for example, the further step that the technique is applied to land surveying makes the claim one to a practical application, and therefore supposedly patent-eligible.[50]

B. The technological-arts test is more difficult to reject, for it clearly contains at least the germ or kernel of the right principle. Although the technological-arts test has great intuitive appeal, it also has severe difficulties. First, and most important, the Constitution and the statute do not mention "technology" or "technological arts."

Second, equating "useful Arts" to "technological arts" simply pushes the search for a satisfactory legal definition to the next level, where it continues to resist definition. Is a machine in the technological arts simply because it is a machine employing technology—if it performs a function clearly outside the useful Arts (for example, Kafka's punishment-that-fits-the-crime machine)? Is a machine for entertaining a cat by using a laser (relatively high technology) in the technological arts?[51] The mere fact that a claimed invention utilizes technology (such as a laser) does not make the device within the useful Arts. Presence of technology is not a touchstone.

Third, the technological arts are only a subset of the useful Arts. If one accepts that technology applies scientific theory to solving practical problems, the resulting technological arts are only those useful Arts derived from scientific knowledge.[52] Yet, some useful Arts (like rubber vulcanization) were purely empirical and non-theoretical. Nevertheless, Congress never chose to narrow the patent-eligible useful Arts to only those that are technological in the scientific sense just used here. *See supra* Part II.C.

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[50] *See Flook*, 437 U.S. at 590.

[51] *See infra* App. A; *supra* Part II.B.

C. The difficulties with these tests suggest that, despite its incompleteness, the machine-or-transformation test is superior to its competitors in filtering out preemptive claims to basic principles. Nonetheless, because the machine-or-transformation test cannot completely diagnose patent-ineligibility, a way to determine what is in the useful Arts is needed, *see supra* Parts I.B-C—that standard, too, must be met.

IV. CONGRESS DID NOT ENDORSE PATENT-ELIGIBILITY OF BUSINESS METHODS

Petitioners misstate the text and legislative history of 35 U.S.C. § 273 by arguing that it shows Congress "embraced" business methods in 1999. Section 273 provides a limited personal defense for patent infringement: if a person used a business method in her business more than a year before the patentee applied for a patent, she is entitled to continue the use without liability. Nothing in § 273 addresses patent-eligibility.

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[52] *See* O'Connor, *Using Insights from the History of Science to Redefine Patentable Subject Matter Under the IP Clause of the U.S. Constitution* 7-8 (2007), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1104899 (science—classically understood narrowly as inquiry into underlying laws and causes of observed phenomena without regard to their application to satisfying human needs or desires—was expressly not part of the arts, generally, and thus not within the useful Arts).

As originally introduced, the legislation did not even mention business methods and applied pervasively to all inventions. After great opposition to the proposal, it was scaled down to a minute fraction of its original scope—as a compromise—limiting it to business methods.[53] Nothing in the legislative history indicates any desire to "embrace" business methods. In any case, because business methods are not within the useful Arts, as the Constitution requires, nothing in the statute could transform them into patent-eligible subject matter. The Constitution is the supreme law of the land. *Marbury v. Madison*, 5 U.S. (1 Cranch) 137, 178 (1803).

V. BILSKI'S CLAIM IS PATENT-INELIGIBLE

To be patent-eligible, an advance must pass both tests—first, *useful Arts* and, second, if it involves application of a basic principle (as here), *machine-or-transformation*, to ensure that the claim does not preempt the basic principle.[54] Failing *either* test results in patent-ineligibility. Bilski's claim is patent-ineligible at the threshold, as a claim to a method of engaging in commerce or business—activity recognized around 1789 as not within the useful Arts. It also fails the machine-or-transformation rebuttable-presumption test.

In theory, therefore, this case could be resolved solely under either test—useful Arts or machine-or-transformation. In our view, however, it makes an important difference which route the Court takes. The judgment of patent-ineligibility should be affirmed because "hedging" against price fluctuations is not within the useful Arts. That decisional route provides more certainty, steers clear of the false negatives and positives that potentially derail the machine-or-transformation test, and avoids raising difficult-to-resolve questions, such as what is a "particular machine," how much transformation is necessary, and what "physicality" must "articles" have. Such issues should be postponed for cases whose records justify and require their resolution.

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[53] *See* 145 Cong. Rec. H6944 (daily ed. Aug. 3, 1999) (statement of Rep. Rohrabacher).

[54] For example, as in the *Funk* and *Flook* cases.

Moreover, if the judgment is affirmed because the claimed method is rebuttably presumed patent-ineligible, arguably the PTO has unfairly not given Bilski adequate notice that he was entitled to, and *must*, rebut the presumption to avoid rejection of his claim. That mandates vacatur and remand to the PTO to give Bilski the opportunity to try to rebut.[55]

In contrast, affirming the judgment because hedging future prices is not within the useful Arts moots other issues. As a matter of law, "hedging" is not within the useful Arts. Like exercising cats, it is categorically and irrebuttably patent-ineligible.

It is therefore more appropriate to affirm the judgment below simply on the ground that "hedging" is patent-ineligible under the interpretation of the statutory term "process" that the Patent Clause compels. Because Bilski's business method is not within the useful Arts, Bilski's process is not the kind of "process" that the Constitution, and therefore that the statute, permits to be the subject of a patent monopoly.

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[55] *Cf. Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 57 (1983) (vacating and remanding to agency); *FTC v. Sperry & Hutchinson Co.*, 405 U.S. 233 (1972) (same).

CONCLUSION

The court of appeals' judgment should be affirmed because "hedging" is not within the useful Arts.

Respectfully submitted,

TOSHIKO TAKENAKA
DIRECTOR
SEAN O'CONNOR
ASSOCIATE DIRECTOR
CENTER FOR ADVANCED
STUDY AND RESEARCH ON
INTELLECTUAL PROPERTY
(CASRIP)
University of Washington
School of Law
Seattle, WA 98195-3020

RICHARD H. STERN
Counsel of Record
KELLOGG, HUBER, HANSEN,
TODD, EVANS & FIGEL, PLLC
1615 M Street, N.W.
Suite 400
Washington, D.C. 20036
(202) 326-7900

Counsel for Amici CASRIP and CASRIP Research Affiliate Scholars

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APPENDIX

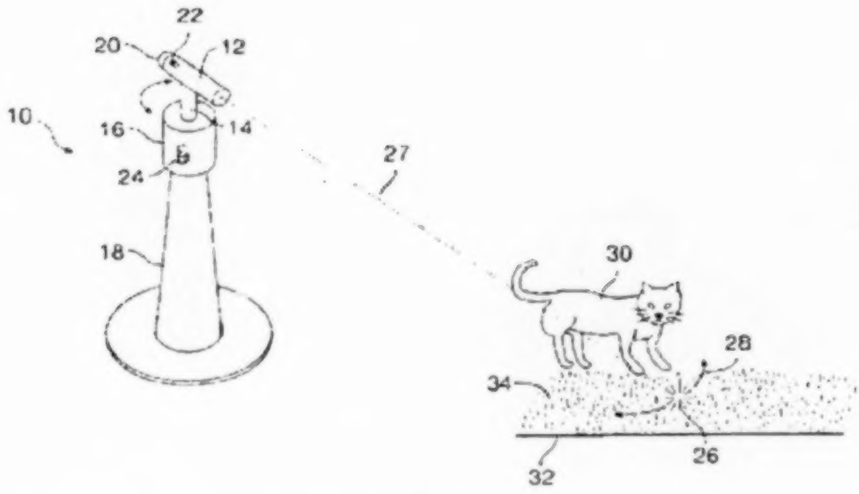
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FIG. 1

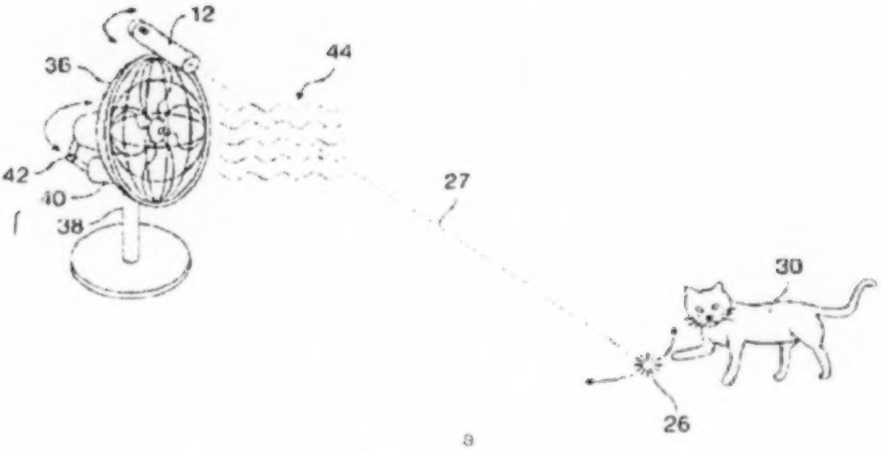
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FIG. 2

METHOD AND APPARATUS FOR AUTOMATICALLY EXERCISING A CURIOUS ANIMAL

BACKGROUND OF THE INVENTION

This invention relates to apparatus for exercising curious animals, especially pet cats. This invention is an improvement over the invention described in U.S. Pat. No. 5,443,036 issued Aug. 2, 1995. Laser pointers are known and in particular it is known that cats are attracted by and stalk the spot of a laser pointed in their vicinity. It is also known that cats are attracted to the air movement of a fan, often to be cooled by such air movement. Heretofore the method for inducing exercise in a cat has been to manually move the spot beam in an arbitrary manner to stimulate exercise.

It has been found that the prior art exercise method is limited my the need for manual intervention, which may not always be desirable. An example is in a cage in a zoo, where large curious animals may need exercise. What is needed is an exercise apparatus which eliminates the need for manual intervention.

SUMMARY OF THE INVENTION

According to the invention, an apparatus for exercising a curious animal such as a pet housecat comprises a laser pointer mounted on a shaft driven by a motor mounted on a pedestal. The rotatable shaft is preferably vertically disposed and the direction of the pointer is preferably obliquely downward so that activation of the motor causes the spot beam of the laser to track a vector of motion to attract a cat into interaction with the spot beam. In a further specific embodiment, the laser pointer may be mounted on the head of an oscillatory air circulation fan with a pedestal. The oscillation of the spot beam, together with the air movement of the oscillatory fan, further stimulates activity in a cat while conveniently inducing convective cooling

The invention will be better understood by reference to the following detailed descriptions in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a depiction of a first embodiment of an apparatus according to the invention.

FIG. 2 is a depiction of a second embodiment of an apparatus according to the invention.

DESCRIPTION OF THE SPECIFIC EMBODIMENTS

Referring to FIG. 1, an apparatus 10 according to the invention is shown. The apparatus 10 comprises a laser pointer 12 mounted on a rotatable shaft 14 driven by a motor 16 mounted on a pedestal 18, which may rest on the floor as shown or be mounted to a ceiling or wall. The laser pointer 12 has a self-contained power supply 20 and an on/off switch 22. A laser pointer is particularly appropriate as a source of production of the exercise object, a spot 26, since the coherent nature of the light and the substantially colinear beam produce a characteristic animated speckel effect which does not substantially grow or shrink, nor increase or decrease in intensity, with distance from the source. The rotatable shaft 14 is preferably vertically disposed and the direction of the pointer 12 is preferably obliquely downward so that activation of the motor 16 by means of a power switch 24 and external or internal power causes the beam

spot 26 of the laser pointer 12 to track around an arc or along a vector 28 of motion such as around the pedestal 18 on the floor to attract a curious animal 30 such as a pet housecat into interaction with the moving spot 26. Depending upon the terrain impinged upon by the beam 27 producing the spot 26, such as a carpet 32 or the like with a fabric pile 34, or even grass, the scattering of light of the beam 27 will effect animation of greater or lesser reflectivity with motion of the spot 26 along the vector 28. This animation attracts and engages the curious animal 30 as it stalks and attempts to restrain the animated spot 26, an impossible task. An extremely curious and persistent animal may spend hours at a time in this exercise, and this resultant exercise benefits the otherwise inactive animal without need for manual intervention to effect the motion of the spot 26.

Referring to FIG. 2, in a further specific embodiment, the laser pointer 12 may be mounted on the head of an oscillatory air circulation fan 36 on an appropriate pedestal 38. A motor 40 causes an eccentric cam and linkage assembly 42 to oscillate the fan assembly 36 about a pivot of the pedestal 38. The reciprocal oscillations of the beam 27, together with the air movement 44 of the oscillatory fan 36, cause the spot 26 to track back and forth along a vector, often staying in close range of the curious animal 30. The spot motion and air movement further stimulates activity in the animal 30 while conveniently inducing convective cooling, providing potential relief and improved comfort for a fur-clad feline or the like, especially in a warm and/or humid environment.

The invention has been explained with reference to specific embodiments. Other embodiments will be apparent to those of ordinary skill in the art. For example, the pedestal mount can be a ceiling or wall mount. It is therefore not intended that this invention be limited, except as indicated by the appended claims.

What is claimed is:

1. An apparatus for exercising a curious animal comprising:
   - a pedestal;
   - a motor having a shaft, said motor being mounted to the pedestal; and
   - a laser pointer producing a spot beam and mounted on said shaft to project the spot beam from the pedestal, said motor causing said shaft to oscillate so that said spot beam tracks about said pedestal with a vector of motion to attract the curious animal into interaction with the spot beam.

2. The apparatus according to claim 1 wherein said shaft is generally vertically disposed.

3. The apparatus according to claim 2 wherein motion of said shaft invokes complete rotation of said spot beam.

4. The apparatus according to claim 1 wherein motion of said shaft invokes complete rotation of said spot beam.

5 The apparatus according to claim 1 wherein the rotatable shaft is preferably generally vertically disposed and the disposition of the laser pointer is preferably obliquely downward so that activation of the motor causes the spot beam to track around the pedestal.

6. An apparatus for exercising a curious animal comprising
   - a pedestal;
   - a motor having a shaft, said motor being mounted to the pedestal;
   - a laser pointer producing a spot beam and mounted on said shaft to project the spot beam from the pedestal, said motor causing said shaft to oscillate so that said spot beam tracks about said pedestal with a vector of

motion to attract the curious animal into interaction with the spot beam, and

an oscillatory air circulation fan on a head, wherein said motor is mounted to provide oscillatory motion of said head, and wherein said laser pointer is mounted to said head such that said motor induces oscillation of the spot beam about said pedestal, together with the air movement of the oscillatory fan to stimulate activity in a cat while conveniently inducing convective cooling.

7. A method for automatically exercising a curious animal comprising:

providing a laser spot beam from a fixed location to an exercise area;

causing said spot beam to move under automatic action of a motor with a vector of motion to induce interaction of the curious animal with the spot beam.

8. A method for automatically exercising a curious animal comprising:

providing a laser spot beam from a fixed location to an exercise area,

causing said spot beam to move under automatic action of a motor with a vector of motion to induce interaction of the curious animal with the spot beam; and

causing air to be blown from a fan moveably mounted to said motor to stimulate the cat and to provide convective cooling to the curious animal.

9. An apparatus for exercising a curious animal comprising:

a portable pedestal capable of arbitrary deployment,

a motor directly driving a movable shaft, said motor being mounted to the portable pedestal; and

a laser pointer producing a spot beam and mounted fixedly with respect to said movable shaft to project the spot beam from the pedestal, said motor causing said shaft to oscillate so that said laser pointer oscillates and said spot beam tracks about said pedestal with a vector of motion to attract the curious animal into interaction with the spot beam.

10. The apparatus according to claim 9 wherein said shaft is generally vertically disposed

11. The apparatus according to claim 10 wherein motion of said shaft invokes complete rotation of said spot beam

12. The apparatus according to claim 9 wherein motion of said shaft invokes complete rotation of said spot beam.

13. The apparatus according to claim 9 wherein the rotatable shaft is preferably generally vertically disposed and the disposition of the laser pointer is preferably obliquely downward so that activation of the motor causes the spot beam to track around the pedestal.

14. A method for automatically exercising a curious animal comprising:

providing a laser spot beam from a rotating laser source mounted directly on a shaft driven directly by a motor mounted on a portable pedestal, and

causing said spot beam to move under automatic action of said motor directly driving said shaft to which said laser source is directly mounted with a vector of motion to induce interaction of the curious animal with the spot beam in an exercise area.

* * * * *

APPENDIX B

CASRIP RESEARCH AFFILIATE SCHOLARS
AMICI CURIAE

The CASRIP Research Affiliate Scholars are professors of intellectual property law who are scholars affiliated with CASRIP but teach at law schools other than that of the University of Washington. The listing below of their respective law schools is for purposes of identification only.

Miriam Bitton
Assistant Professor
Bar-Ilan University, Faculty of Law
Ramat Gan, Israel

Shubha Ghosh
Professor of Law
University of Wisconsin Law School
Madison, Wisconsin

Tyler T. Ochoa
Professor of Law
High Technology Law Institute
Santa Clara University School of Law
Santa Clara, California

AMICUS
CURIAE
BRIEF

Supreme Court, U.S.
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AUG 6 - 2009
OFFICE OF THE CLERK

57

No. 08-964

IN THE

Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,

Petitioners,

v.

JOHN DOLL, ACTING UNDER SECRETARY OF COMMERCE
FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR,
PATENT AND TRADEMARK OFFICE,

Respondent.

ON WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

BRIEF OF DR. ANANDA CHAKRABARTY AS *AMICUS CURIAE* IN SUPPORT OF PETITIONERS

RICHARD A. EPSTEIN
1111 East 60th Street
Chicago, Illinois 60637
(773) 702-9563

F. SCOTT KIEFF
Counsel of Record
1111 23rd Street, NW
Apt 8d
Washington, DC 20037
(202) 558-6667

August 6, 2009

Counsel for Amicus Curiae

BATEMAN & SLADE, INC
BOSTON, MASSACHUSETTS

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INTEREST OF *AMICUS* CURIAE

Dr. Ananda Chakrabarty is Distinguished University Professor in the College of Medicine's Department of Microbiology and Immunology at the University of Illinois at Chicago. He was the inventor of the bacterium at issue in this Court's decision in *Diamond v. Chakrabarty*, 447 U.S. 303 (1980), which supported a broad definition of patent eligibility. Since that time, he has been a leading voice in the field of patent policy. He has no direct stake in the outcome of this case and is primarily interested in ensuring that patent law develops in a way that best promotes innovation and competition.[1]

STATEMENT OF CASE

Any patent application must go through two stages before actual patent rights are awarded by the Patent Office. The first of these inquiries deals with "patent eligibility." That question determines what types of inventions can be considered for patent protection. Patent eligibility thus performs a gatekeeper function. If an invention is not patent eligible, no other provision of the patent law can secure patent rights for that invention. Patent eligible inventions are not, however, automatically entitled to protection. Each such invention must thereafter be examined under a second, well-known set of requirements: novelty, non-obviousness, and disclosure. These are more specific inquiries that ask whether or not the claimed invention merits the protection of the state by being a sufficient advance over the existing body of patented materials and by being supported by a sufficient disclosure to provide the public with notice and scientific teaching.

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[1] *Amicus* has no financial interest in the outcome of this case. No counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. The Hoover Project on Commercializing Innovation at Stanford University's Hoover Institution paid the actual printing and filing costs. Counsel for *amicus curiae* prepared this brief on a *pro bono* basis as part of their academic work in the field.

In the decision below, the Federal Circuit held that the Patent Office properly rejected the applicants' claimed process for managing legal and business risk. The court's sole ground was that the claimed process failed to meet the court's newly announced and seriously restrictive test for patent eligibility. Under the court's "machine or transformation test," a claimed process must be "tied to a particular machine or apparatus, or … transform[ ] a particular article into a different state or thing." *In re Bilski*, 545 F.3d 943, 954 (Fed. Cir. 2008) (*en banc*).

This test threatens to transform patent law for the worse. The key to modern technology lies in the assembly, organization and use of information of all sorts, kinds and descriptions. The physical substrate in which it is contained is at best a mere technical detail that is under the Federal Circuit's rule elevated to an end in itself, which only frustrates the great ends for which the patent law is designed. Dr. Chakrabarty's own research on advanced techniques for personalized medicine is placed at risk by the narrow definition of patent eligibility used in the Federal Circuit.

In light of all the relevant information, the Federal Circuit's approach must be rejected because it is in conflict with the statute, with the precedents of this Court, and with sound public policy. Of particular concern to Professor Chakrabarty is that affirming the decision below will place a dark cloud over the status of his own future research. A broad reading of patent eligibility has played a central role in fostering both output from and competition within a range of technology industries.

The course charted in the Federal Circuit marks an abrupt and unwarranted about-face from the bold decision in this Court's 1980 *Chakrabarty* case. Over strong objections that living things were *per se* patent ineligible, this Court rejected the argument of the Patent Office that subject matter relating to living things was excluded from patent eligibility. That case involved Dr. Chakrabarty's patent application for a genetically engineered bacterium.

The *Chakrabarty* decision's strong affirmation of the broad scope for the patent system has been the fundamental pillar supporting the dramatic success of the United States' biotechnology industry. At the same time, the *Chakrabarty* decision is situated squarely in the middle of a host of this Court's decisions relating to the patent eligibility of various business- and computer-related inventions, which have spurred huge technical advances in related fields.

Before the 1980 *Chakrabarty* decision, the United States, Europe, and Japan each had large biotechnology companies, often collectively called "Big Pharma," which competed with rough parity with each other. Each region has continued to be home to Big Pharma companies to this day. All three regions have enjoyed access to comparable technological and capital resources. But neither Europe nor Japan took the decisive step that the United States made through this Court's *Chakrabarty* decision, which ignited the boom in basic biotechnology that continues to this day. The rest of the world lags behind because the narrow vision of patent law that was adopted elsewhere led to the erection of various artificial roadblocks to effective patents, and resulting industrial development.

This distinctive United States stance has paid huge dividends to this country in the 29 years after *Chakrabarty*. Since 1980, the United States biotechnology industry has expanded so that Big Pharma companies are no longer the only significant players. Their skills have been augmented by an expanding pool of small- and medium-sized companies that regularly numbers around 1,400 in its ranks.[2] The pool is constantly turning over as some of these companies fail while others succeed spectacularly and fuel the appetite for more startups, whose livelihood depends on their ability to develop some patentable technology.

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[2] *NIH: Moving Research from the Bench to the Bedside: Hearing Before the Subcomm. on Health of the H. Comm. on Energy and Commerce*, 108th Cong. 47 (2003), *available at* http://energycommerce.house.gov/108/action/108-38.pdf (statement of Phyllis Gardner, Senior Associate Dean for Education and Student Affairs, Stanford University) (detailing the differences between the smaller biotechnology companies and those in Big Pharma).

This unique growth in the United States' biotechnology industry stems from the virtuous circle that the *Chakrabarty* decision helped create. The firms that have grown through their patented technologies in turn supply fresh resources to fund the basic biological research community. That community in turn improves the knowledge of general scientific laws, which aids the formation of new commercial firms. The general public benefits from the steady stream of new and better goods and services that have revolutionized vital industries such as healthcare.[3] The broad account of patent eligibility has lowered the gates so that more can play, and in so doing it has spurred our biotechnology industry to be the most vibrant and competitive in the world.

The key role played by a broad eligibility requirement is equally important within the field of business- and computer-related inventions, which encompasses the patent application filed by Petitioner in this case. In the early 1970s, the United States' software industry was devoid of meaningful patent protection because of the uncertainty created by this Court's decision in *Gottschalk v. Benson*, 409 U.S. 63 (1972).

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[3] Ian *Cockburn et al., Pharmaceuticals and Biotechnology, in* U.S. Industry in 2000 Studies in Competitive Performance 389-92 (David C. Mowery ed., 1999) (reviewing relative performance of the U.S. biotechnology industry).

While *Benson's* holding was narrow, its impact was to leave all patents for computer software vulnerable to serious challenges.[4] Unfortunately, the *Benson* approach controlled throughout the 1970s, until this Court's decisions in *Chakrabarty* and *Diamond v. Diehr*, 450 U.S. 175 (1981), holding that software patents were not subject to *per se* exclusion, started to revive the market. Indeed, it was only with *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994) (*en banc*) and *State Street Bank & Trust Co. v. Signature Fin. Group Inc.*, 149 F.3d 1368 (Fed. Cir. 1998) that the increased confidence in software patents translated into major infusions of investment capital. Yet these are the very decisions that the Federal Circuit has unwisely called into question in the instant case. *Bilski*, 545 F.3d at 990-92 (Newman, J., dissenting) (noting the majority's break with these important precedents). That window of reliable eligibility for business method and software patents has been closed over the past several months by the recent Federal Circuit cases including the *en banc* decision now before this Court. That point raises real concern because the same patent system that creates the initial economic advantage to the first in the field also gives a strong encouragement for new firms to compete against its initial patent advantage by affording powerful patent protection to the next generation of new and useful inventions.

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[4] For a discussion of the lead-up to *Benson*, and its impact, see *In re Johnston*, 502 F.2d 765, 772–774 (CCPA 1974) (Rich, J., dissenting) (noting normative problems with such a rule against software patents but pointing out the appellate court's duty to follow this Court's case law on the issue).

It may seem at first blush that broad patent eligibility would lead to an unseemly deluge of patents. But the ultimate success or failure of any patent in any field of technology must still be tested through a gauntlet of challenges that are both legal and economic. On the legal side, an applicant will only receive a valid patent if it can carry the burden of preparing a sufficiently strong application containing claims that avoid the prior art. On the economic side, the patentee can recover its initial investment only if it can successfully navigate the complex world of commercial transactions in the face of ever shifting technological and market landscapes.

Restraints like these deter frivolous Patent Office and patent litigation filings whose sole purpose is to block other innovators from making their mark in the marketplace. The empirical findings on the ground do not bear out all the gloomy talk about patent blockades, for private owners of valid patents do not act like Soviet-style bureaucrats who only prosper by blocking the gainful activities of others. Patents are wasting assets that can produce revenue only to the extent that they lead to production or licensing or both.[5]

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[5] A popular trend in policy debates is to worry about a putative problem of a patent "anticommons" that might be created when there are too many valid patents in an area. See Michael Heller and Rebecca Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 Science 698, 700 (1998). But the worries about an anticommons in the U.S. patent system are misplaced for several reasons, including the nature of the holder of the underlying assets, the nature of the licensing over those assets, and the flexibility private parties enjoy to bundle or divide both the assets and the licenses. See Richard A. Epstein & Bruce Kuhlik, *Is There a Biomedical*

A restrictive approach to patent eligibility embodies a dangerous view of industrial policy, because it puts the Patent Office in the business of picking winners and losers at the outset – by foreclosing patent examination on the merits for inventions that could well run the gauntlet of the second level challenges that face all patent applications. Broader eligibility rules avoid truncating the process by ruling out of bounds entire classes of useful inventions that have been routinely evaluated successfully on a case-by-case basis like all other inventions.

SUMMARY OF ARGUMENT

The Court should reject the Federal Circuit's new, restrictive approach to patent eligibility because it is in conflict with the statute, the precedents of this Court, and sound public policy. The approach of the Federal Circuit decision now on review finds no support in the statute. The statute speaks in broad,

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Anticommons, Regulation, Summer 2004, at 54 (discussing the incentives of private holders of wasting assets to negotiate towards productive use); F. Scott Kieff, *On Coordinating Transactions in Information: A Response to Smith's Delineating Entitlements in Information*, 117 Yale L.J. Pocket Part 101, 106 (2007) (discussing mechanisms by which holders of the assets and those seeking licenses can and do transact with each other). For empirical evidence against the Heller-Eisenberg hypothesis, *see* Timothy Caulfield et al., *Evidence and Anecdotes: An Analysis of Human Gene Patenting Controversies*, 24 Nature Biotechnology 1091 (2006) (reviewing data); John P. Walsh et al., *View from the Bench: Patents and Material Transfers*, 309 Science 2002 (2005) (reporting empirical results that demonstrate that "access to patents on knowledge inputs rarely imposes a significant burden on academic biomedical research").

expansive terms when it holds that patent protection should extend to "*any* new or useful process, machine, manufacturer, or composition of matter, or *any* new and useful improvement thereof." 35 U.S.C. §101 (2006) (emphasis added). There are no sound policy reasons that should lead this Court to unduly limit the ordinary meaning of these terms, whose sole proper office is to exclude the coverage of ideas, natural laws and natural phenomena.

The Federal Circuit's narrow interpretation of patent eligibility disrupts this sensible scheme. It strikes first at excluding patents in the area of business methods and software, in direct conflict with this Court's decision in *Diehr*. Worse still, the Federal Circuit's approach could easily cast a pall over all method claims in other areas of technology. Given the long established links between the eligibility rules for software and biotech, it is likely to spread its tentacles to biotech in particular, thereby undermining the huge boost that this Court's decision in *Chakrabarty* gave to bioscience, which this Court blessed in its subsequent decision of *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124 (2001).

The Federal Circuit's sharp break from established law is also bad policy. It would cloister off large segments of the economy from the vibrant beneficial impact that patents have had in the United States in improving innovation and competition for both domestic and international markets. That sudden and unexplained reversal of policy would by judicial fiat seriously frustrate the many investment-backed expectations in existing patents, which could now be subject to challenge under far higher standards for patent eligibility than those under which the patents were granted. In particular, it would place the research efforts of Professor Chakrabarty under a cloud by reducing the prospects for its successful commercialization.

If left standing, the approach the Federal Circuit has taken in this case would likely engender other unfortunate consequences in the administration of patent law. There is little doubt that many of the modern advances in areas of technology and finance are wrapped up in the creation, organization, and interpretation of information. That information could be embodied in a wide number of different physical substrates, none of which is critical to its social utility or commercial success. There is a major risk, should the decision below be affirmed, that inventors will now seek to recast their patent claims in ways that seize onto some inessential detail of the invention's implementation in order to satisfy a "machine or transformation test" that is better suited to the nineteenth century than the twenty-first. But those strategic maneuvers will only produce deadweight losses, as these physical elements will unduly limit the scope of claims and put greater pressure on the doctrine of equivalents than is now the case.

Keeping the patent eligibility gates open is vital for information-intensive industries like healthcare and finance. The spate of new inventions will have positive ripple effects on key actors in adjacent and complementary fields. Patents on business and science methods require disclosure of valuable information about risky undertakings, enabling patients, doctors, investors, and investment advisors to make more informed decisions. For example, investors would generally prefer for a hedge fund to disclose a risky derivatives scheme in a patent application than to keep it a trade secret. Patent transparency will also outperform mandatory disclosure regulation in getting valuable information into the public domain. Direct regulation does not offer any benefit to the regulated firm remotely comparable to that of patent protection.

No one doubts that there are a host of problems in the administration of patents, which should be addressed. But these are often localized to specific areas or involve the administration of the patent system. Patent eligibility is too blunt and too crude an axe to deal with these problems, for which much more laser-like fixes are appropriate.

In the end, *Amicus* of course does not take a position on how this particular patent application should be examined under the long established substantive rules relating to the disclosure and the prior art. But the looming tragedy if the Federal Circuit's ruling is upheld is that nobody will ever find out, as a large swath of patent applications will be unceremoniously barred at the gates from even having a shot at competing in the commercial arena of patents.

ARGUMENT

The Federal Circuit is improperly swinging the very blunt axe of the patent eligibility doctrine to excise from the patent system a huge swath of applications, many of which could well satisfy all of the substantive requirements for obtaining a patent. The court confessed to this charge when it wrote: "[w]hether a claim is drawn to patent-eligible subject matter under § 101 is a threshold inquiry, and any claim of an application failing the requirements of § 101 must be rejected even if it meets all of the other legal requirements of patentability." *Bilski*, 545 F.3d at 950. But at no point does it offer reasons that support this radical surgery. This Court should reject such an approach because it is inconsistent with the statutory language, the precedents of this Court, and sound public policy.

I. The Federal Circuit's Approach Conflicts with the Statute

The Federal Circuit's "machine or transformation" test has no basis in the relevant statutory language, which is both clear and broad with respect to the question of patent eligibility:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title. 35 U.S.C § 101.

The section provides an expansive list in ways that do not try to prejudge which inventions will make sense for science and commerce and which do not. In case there were any doubt of the breadth intended by the word "process" in particular, the statute also expressly provides its own definition: "The term 'process' means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material." 35 U.S.C § 100(b) (2006). The combination of these two provisions in the statute creates a legal test that leaves the real limits on patentability to come from the other "conditions and requirements of this title." 35 U.S.C § 101. The linguistic framework of the next two sections in the statute confirms Section 101's broad reach. Those sections are respectively titled "Conditions for patentability; novelty and loss of right to patent" and "Conditions for patentability; non-obvious subject matter." 35 U.S.C §§ 102-103 (2006). That is, the serious limits on patent claims are imposed by the sections of Title 35 that are outside of Section 101. These substantive limits include the prior art rules of Sections 102 and 103, which are known as "novelty," "statutory bar" ("loss of right"), and "nonobviousness," as well as the disclosure rules set forth in Section 112, which are known as "written description," "best mode," "enablement," and "definiteness." See, 35 U.S.C § 112, ¶¶1-2 (2006). This Court has expressly agreed with this reading. As Judge Newman pointed out below in dissent, in "*Diehr*, the Court explained that Section 101 is not an independent condition of patentability, but a general statement of subject matter eligibility." *Bilski*, 545 F.3d at 977 (Newman, J., dissenting) (citing *Diehr*, 450 U.S. at 189-90).

II. The Federal Circuit's Approach Conflicts with this Court's Precedent

The Federal Circuit's machine or transformation test directly conflicts with this Court's well-established precedent, as Judge Newman also explained in depth in her dissent below. Not only did this Court expressly reject the "machine or transformation" test in both *Benson* and *Parker v. Flook*, 437 U.S. 584 (1978), this Court in *Chakrabarty*, *Diehr*, and *J.E.M. Ag Supply* expressly embraced a very broad reading of Section 101 eligibility to reach "anything under the sun made by man." *Bilski*, 545 F.3d at 977, 978-83 (Newman, J., dissenting) (providing detailed analysis of each case) (quoting *Chakrabarty*, 477 U.S. at 309 (citing S. Rep. No. 82-1979, at 5 (1952), *reprinted in* 1952 U.S.S.C.C.A.N. 2394, 2399; H.R. Rep. No. 82-1923, at 6 (1952))).

The choice of those words was intended to allow the patent law to sweep broadly so as to embrace new forms of knowledge and technology that were unknown when they were incorporated in the 1952 Act by Congress (largely drafted by Judge Giles Rich), which was intended to reverse some of the narrow decisions on patent eligibility that had grown up in the courts in the 1940s, such as *Funk Brothers Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127 (1948). The patentee in that case had devised a method in which multiple strains of a particular bacterium where able to coexist in order to help a wide range of plants take nitrogen from the air.

If the hostile attitude toward patents expressed in *Funk Brothers* had carried over to modern times, it is likely that the genetic revolution would have been long retarded. It was just to avoid this cramped interpretation of the patent law that Congress enacted the current Section 101. That work should not be undone by adopting a new rule that is inconsistent with the *Chakrabarty* line of cases

III. The Federal Circuit's Approach Conflicts with Sound Policy

A. Sound Patent Law Need Not Tie a Patentable Invention to Some Physical Mode of Its Expression.

As Judge Rader pointed out in dissent, below, a fundamental policy issue that seems to be overlooked by the Federal Circuit majority is the basic theoretical question of "*why* would [it make sense for] the expansive language of section 101 [to] preclude protection of innovation simply because it is not transformational or properly linked to a machine (whatever that means)?" *Bilski*, 545 F.3d at 1012 (Rader, J., dissenting) (emphasis in original). To be sure, as this Court has consistently held, it does make good sense to exclude from patent protection ideas, natural phenomena, and natural laws. *Diehr*, 450 U.S. at 185) (citing *Flook*, 437 U.S. at 589, *Benson*, 409 U.S. at 67). Indeed, these categories are already excluded by a basic application of the more substantive and more well known of patent law's requirements: the novelty and non-obviousness rules would prevent patents on all three because they already exist, in nature; and the disclosure rules would prevent patents on at least abstract ideas because they are not able to be put to use if they are merely abstract.

It might seem as though the patent system needs to be updated to deal with the new technologies of today and tomorrow. It would be easy to conjure up the image of our Founding Fathers, dressed in 18th century fashions, unable to anticipate that the patent system they provided for in the Constitution would be applied to modern marvels like molecular biology or the internet. But the charge that the law must be updated to deal with new technologies is absurd when it comes to patents. The entire patent system, with its core patentability requirements of novelty and nonobviousness, was designed to embrace unforeseen technologies. As this Court pointed out in the *Chakrabarty* decision: "A rule that unanticipated inventions are without protection would conflict with the core concept of the patent law that anticipation undermines patentability." 477 U.S. 315.

Indeed, the rapid advance of technology is precisely a reason why fears about hyper proliferation of patenting in new fields are overblown. With new areas of technology come new reservoirs of prior art. As this Court took pains to elaborate forty years ago in *Graham*, the ever-advancing state of the art fixes many of the problems with patents:

> Technology, however, has advanced – and with remarkable rapidity in the last 50 years. Moreover, the ambit of applicable art in given fields of science has widened by disciplines unheard of a

> half century ago. It is but an evenhanded application to require that those persons granted the benefit of a patent monopoly be charged with an awareness of these changed conditions. The same is true of the less technical, but still useful arts. He who seeks to build a better mousetrap today has a long path to tread before reaching the Patent Office. *Graham v. John Deere*, 383 U.S. 1, 19 (1966).

B. Strong Patent Protection Opens Technology Markets to Multiple Players and Facilitates Cooperation Among Them.

A broad reading of patent eligibility has played a central role in fostering both output from and competition within a broad range of technology industries. As Judge Jerome Frank once put it, predictable patents can be the vital slingshots smaller innovative 'Davids' use to compete against large established 'Goliaths.' See *Picard v. United Aircraft Corp.*, 128 F.2d 632, 643–644 (2d Cir. 1942) (Frank, J. dissenting).

Getting an invention made and bringing it to market requires coordination among its many complementary users, including developers, managers, laborers, other technologists, financiers, manufacturers, marketers, and distributors. Patents help achieve this socially constructive coordination by allowing those various actors to interconnect with each other like modules of a larger system. The underlying mechanism depends in at least three fundamental ways on the expectation that patents will be available and enforced.

First, the credible threat of a published patent's right to exclude acts like a beacon in the dark, drawing to itself all those interested in the patented subject matter. This beacon effect motivates those diverse actors to interact with one another and with the patentee, starting conversations among the relevant parties.

Second, the widespread expectation that the patent will be enforced motivates each of these parties to reach agreements with one another over the use and deployment of the technology. That bargaining effect falls apart if the parties are unsure that the patent will be enforced; if the patent is seen as unlikely to be enforced, there is significantly less need to reach agreement *ex ante*. Thus the fear of uncertain enforcement creates a disincentive for the necessary parties to work together at the outset. This change in result is not a matter of indifference. The voluntary agreements entered into by the various firms are dense relationships that are tailored to the specific circumstances of each case. A complex cooperative agreement could easily run hundreds of pages, all of which are calculated to maximize the gains from trade among the parties. Remove the patent system, and the gains from cooperation over technology will shrink. And the increased reliance on trade secrets will deny the rest of the scientific and other communities the public disclosures in the patent that help direct competitors into fruitful areas of research, and customers, advisors, and regulators into fruitful areas of inquiry.

Third, patent protection allows patentees and all other complementary users of the invention engaged in the coordination process to appropriate the returns to inputs (many of which economists term "rival" because use by one person deprives use by another) to developing and commercializing innovation – labor, lab space, unique business relationships, and so forth – without the law having to trace their relative contributions through either complex administrative procedures or complex litigation. Instead patents form a platform on which coordination and development can take place.[6]

C. Localized Solutions Offer the Best Means for Dealing with Particular Defects of the Patent System.

While patents are important for increasing access to new technologies as well as competition, *Amicus* recognizes that a number of problems can be associated with patents. These should be taken seriously and they are. But using the tool of patent eligibility to solve them would make little sense because it would not help resolve problems that are far more localized.

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[6] Henry E. Smith, *Intellectual Property as Property: Delineating Entitlements in Information*, 116 Yale L.J. 1742 (2007) (discussing modularity and information costs); F. Scott Kieff, *On Coordinating Transactions in Information: A Response to Smith's Delineating Entitlements in Information*, 117 Yale L.J. Pocket Part 101 (2007) (discussing beacon and bargaining effects for facilitating coordination).

Here are some examples of the basic proposition. The constant concerns about the delay in processing patents or in the reliability of patent determinations are well known. But patent eligibility is a vastly inferior device for dealing with these than a shift in budgetary allocations to the Patent Office or a change in the procedures whereby patents can be challenged either before the Patent Office or in court.

At a more doctrinal level, designing the prior art rules to prevent patents from issuing for technological advances that are already in the public domain or in patents acquired by third parties serves to protect the reliance interests of third parties against a late-comer into the field.[7]

Similarly, designing the publication rules of 35 U.S.C. § 122(b) and the disclosure rules of 35 U.S.C. § 112 to put the world on notice of patent claims soon after an application is filed mitigates similar opportunism concerns of third parties arising after a patent is filed.

The rules of laches, implied license, and estoppel can further act to prevent unfair surprise by a lurking patentee who sits on his rights when others actively seek to develop their own inventions.

Finally, good rules on licensing can increase the gains from trade by reducing the transaction costs needed to make voluntary agreements.

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[7] This is the role played by the novelty, statutory bar, and nonobviousness requirements. *See* 35 U.S.C. §§ 102-03.

Closer to home, claims of sloppy patent control for business patents do not require throwing out the baby with the bathwater, as the other patent levers could result in sensible standards for nonobviousness, novelty, and disclosure that are appropriate to each case.

We need not decide here which of these possible reforms is better handled by Congress and which by the Courts. It is enough to say that neither the legislature nor the judiciary should select patent eligibility as the tool of choice to deal with any of the problems mentioned above or others that may arise in the future. Targeted responses to specific problems dominate the blunderbuss approach of the Federal Circuit's "machine or transformation" test. Patent eligibility purports to pick winners and losers at the outset, before any of the more discriminating tests for patentability ever kick in.

Consider the specific rejection in this case of Petitioners' claim to a process for managing legal and business risk because the process failed to meet the Federal Circuit's unduly restrictive test for patent eligibility – the "machine or transformation test." That technology addressed one critical problem that contributed to the recent financial crash which was attributable at least in part to the inability of even the best financiers on Wall Street to appreciate a host of legal and business risks, which are difficult to model and thus difficult to guard against. The need for techniques to estimate the frequency and severity of so-called low probability events is critical to preventing a repetition of these massive dislocations.

Against that backdrop, it belies reality for the Federal Circuit majority to insist that the ability to develop new programs and protocols to deal with these issues is not of the highest order of importance. Yet that court's decision explicitly derogates from its own two earlier decisions, *State Street Bank & Trust v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), and *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994), which have afforded broader protection for business method and scientific patents. It shows deep inability to perceive the arc of modern technology to deny patent protection for the archaic reason that the proposed invention does not meet some nineteenth century test of physical transformation.

Put differently, all modern understandings of risk take seriously that a true reduction (or increase) in risk leads to a significant change in overall social welfare. There is no doubt that even the Federal Circuit's cramped test treats as patent eligible a method of rescuing an innocent citizen who has been crushed by a freight train. No sound policy reason countenances turning our back categorically on patent protection for those novel technologies that enable us to better manage the risk of collision in the first instance.

In sum, many of the other areas of the patent system's rules have been under consideration for change in recent debates before Congress and this Court. And perhaps they should be changed. But any sensible reform should come through the front door of a reasoned and focused debate about the merits and demerits of specific changes as they relate to each other and to the larger patent system. Back door reform by way of a new judge-made limit on patent eligibility is the worst way to go.

IV. The Federal Circuit's Approach Will Have a Profound Adverse Effect on the Public's Ability to Benefit from Dr. Chakrabarty's Own Research

Professor Chakrabarty's own research on infectious diseases and drug design and discovery gives ample testimony to the importance of the case that bears his name. It is now well known that the effectiveness of a drug varies with each patient, whose genes often dictate whether a particular compound will reach its target and how it will act when it arrives. One example involves the use of the drug Herceptin, a monoclonal antibody, in breast cancer patients. Only some breast cancer patients, about 10 to 15%, will have the cancers expressing a gene, called HER 2, that Herceptin targets. Thus HER 2-positive breast cancer patients in whom the gene is well expressed will be excellent recipients for Herceptin treatment. In contrast, others with low-level expression of the gene will derive little benefit from this drug. Expression of genes can also dictate if a person infected with the AIDS virus HIV-1 will develop AIDS or not, because of the expression of a gene or genes that are involved in the entry of the virus to the CD4+ T cells.

These general ideas are of course in the public domain. But much hard work remains to translate them into useful inventions that will reduce human disease and suffering. These innovative ideas in human genotypes and drug effectiveness have given rise to the fast emerging medical field of personalized medicine, where the efficacy of a drug is determined based on the genetic constitution of the patient. The narrow definitions of patent eligibility adopted by the Federal Circuit could slow down the pace of progress. To determine the genetic constitution of each patient requires not only the knowledge of the sequence of the genomic DNA but also methodologies to determine which genetic variant may represent drug susceptibility or a lack of it. Such methods may not involve any machine, or transformation of an article to another state or thing. But it is virtually certain that they will require extensive literature searches, insightful analyses, logical deductions, and complex experimentation to determine if the target of a drug is properly expressed in the patient's genome to make the drug functional and effective.

Professor Chakrabarty's current research lies at the intersection of these new fields in bioscience. It concerns the development of multi-disease-targeting drugs, where a single candidate drug may be used in the treatment of a multitude of diverse diseases such as cancer, HIV/AIDS, malaria, and others. No such drug currently exists. Yet strong patent laws will speed their development. Seven U.S. patents have been issued between 2006 and 2009 relating to the fruits of Dr. Chakrabarty's work on the development of candidate drugs and several other patents are pending. Thus, there is no question of the patent eligibility of these drugs. Yet there is ample reason to support Professor Chakrabarty's worry that the highly restricted definition of patent eligibility by the Federal Circuit will prevent future patents on many aspects of personalized medicine. The baleful consequences of such a decision would be to greatly reduce progress in this field and the consequent development of new, innovative processes to determine drug efficacy in individual patients.

This Court's 1980 *Chakrabarty* decision declared "anything under the sun that is made by man" is the proper test for patent eligibility. 447 U.S. 309. That broad interpretation, not any stylized "machine or transformation test," is the key to the full development of personalized medicine and other aspects of biomedical science. The Federal Circuit's decision to restrict patent eligibility of these important innovations will do much to prevent or delay such critical innovations from reaching the bedside or the market place.

CONCLUSION

Amicus respectfully urges this Court to reject the "machine or transformation" test articulated by the Federal Circuit and reaffirm the broad rules for patent eligibility elucidated by this Court in *Chakrabarty*, *Diehr*, and *J.E.M. Ag Supply*.

Respectfully submitted,

RICHARD A. EPSTEIN
1111 East 60th Street
Chicago, Illinois 60637
(773) 702-9563

F. SCOTT KIEFF
Counsel of Record
1111 23rd Street, NW
Apt 8d
Washington, DC 20037
(202) 558-6667

August 6, 2009

Counsel for Amicus Curiae

CERTIFICATE OF SERVICE

I hereby certify that I have caused three true and correct copies of this BRIEF OF DR. ANANDA CHAKRABARTY AS *AMICUS CURIAE* IN SUPPORT OF PETITIONERS to be served on this 6th day of August, 2009, by Federal Express, as well as one electronic copy by email, to the following:

J. Michael Jakes
Finnegan Henderson Farabow Garrett & Dunner, LLP
901 New York Avenue, NW
Washington, DC 20001-4413
(202) 408-4000
mike.jakes@finnegan.com
Attorneys for Petitioners, Bernard L. Bilski and Rand A. Warsaw

Elena Kagan, Solicitor General
United States Department of Justice
950 Pennsylvania Avenue, N.W.
Washington, DC 20530-0001
(202) 514-2217
SupremeCtBriefs@USDOJ.gov
Attorneys for John J. Doll, Acting Under Secretary of Commerce of Intellectual Property and Acting Director, Patent and Trademark Office

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◆

BERNARD L. BILSKI and RAND A. WARSAW,

Petitioners,

v.

JOHN DOLL, Acting Under Secretary of Commerce
for Intellectual Property and Acting Director,
Patent and Trademark Office,

Respondent.

◆

**On Writ Of Certiorari To The
United States Court Of Appeals
For The Federal Circuit**

◆

BRIEF OF *AMICUS CURIAE* LAW PROFESSOR KEVIN EMERSON COLLINS IN SUPPORT OF NEITHER PARTY

◆

KEVIN EMERSON COLLINS
INDIANA UNIVERSITY
MAURER SCHOOL OF LAW –
BLOOMINGTON
211 S. Indiana Avenue
Bloomington, IN 47405
(812) 856-1841

August 6, 2009

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INTEREST OF THE *AMICUS CURIAE*[1]

Amicus Curiae Kevin Emerson Collins teaches patent law and intellectual property law in the United States, and he has written extensively on the doctrine of patent eligibility. He has no financial interest in the outcome of this case. He is interested in the application of the patent statutes in a manner that most effectively promotes innovation and most accurately reflects the intent of Congress.

◆

SUMMARY OF THE ARGUMENT

The doctrine of patent eligibility, lodged in 35 U.S.C. § 101 (2006), should forbid the issuance of a patent claim whenever the advance over the prior art resides entirely in the human mind. A claim should not be eligible for patent protection if the advance resides solely in mental states or processes, even if they are useful, novel, and nonobvious and even if the claim as a whole recites prior-art, extra-mental technologies as well.

A bar on any claim in which the advance resides solely in a mental process is a refinement of the historical mental steps doctrine, which the Court of

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[1] No counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than *amicus curiae* made a monetary contribution to its preparation or submission.

Customs and Patent Appeals (CCPA) erroneously abandoned, and the printed matter doctrine, which the Court of Appeals for the Federal Circuit unfortunately treats as an afterthought in its section 101 jurisprudence. The decline of these doctrines follows from the conventional wisdom that they are not supported by the Patent Act. This conventional wisdom is inaccurate. An interpretation of section 101 that looks to the structure of the Patent Act as a whole, and its disclosure provisions in particular, demonstrates that Congress did intend to bar claims from the patent regime when the advance resides solely in a mental process. Such a bar is necessary to enforce patentees' disclosure obligations. But for the mental steps and printed matter doctrines, patentees could privatize acts of thinking about the very newly discovered information that they are required to publicize in their specifications.

The mental steps and printed matter doctrines employ a "point of novelty" or "patentable weight" analysis. *In re Gulack*, 703 F.2d 1381, 1385 (Fed. Cir. 1983) (printed matter); *In re Abrams*, 188 F.2d 165, 166 (C.C.P.A. 1951) (mental steps). This approach concededly diverges from the claim as a whole analysis employed in *Diamond v. Diehr*, 450 U.S. 175 (1981). Nonetheless, the mental steps and printed matter doctrines are entirely consistent with this Court's precedents on section 101. This Court's precedents address only claims implicating newly discovered laws of nature. *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), presents this Court with a case of first impression concerning claims describing mental processes.

This brief urges this Court to shore up the foundations of the doctrine of patent eligibility. It takes no position on either the machine-or-transformation test as a necessary condition for patent eligibility or any other restriction on patent eligibility that can be layered on top of a mental-process foundation. The mental steps and printed matter doctrines establish a basic, intuitive, and administrable limit on the reach of patent protection. A bar on claims when the advance resides solely in a mental process should be the cornerstone of patent eligibility, not a historical anomaly or inconsequential afterthought.

Bilski presents an excellent vehicle for this Court to engage in this foundational work. In *Bilski*, the Federal Circuit puts forward a sweeping reformulation of the doctrine of patent eligibility, announcing the machine-or-transformation test as a sufficient or "sole" test for patent eligibility. *Id.* at 955-56. The Federal Circuit errs in *Bilski* because the machine-or-transformation test improperly sanctions patent protection for mental-process inventions when claims recite prior-art, extra-mental steps that require a particular machine or transform an article to a different state or thing.

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ARGUMENT

I. The Patent Act Supports a Bar on Patent Claims When the Advance Resides Solely in a Mental Process

A bar on patent claims when the only advance over the prior art resides in a mental process is easily defended as a matter of economic patent policy. Newly invented "mental processes" are frequently "the basic tools of technological and scientific work." *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972). The costs of slower future innovation that follow from allowing private rights to govern basic tools are likely to outweigh whatever incentives to produce basic tools patent protection might provide. *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124, 126-27 (2006) (Breyer, J., dissenting from the dismissal of the writ of certiorari as improvidently granted) (discussing the costs attendant to treating basic tools as property); Brett M. Frischmann & Mark A. Lemley, *Spillovers*, 107 Colum. L. Rev. 257, 279-82 (2007) (discussing the costs of subjecting the inputs of productive processes to private property).

However, a bar on patent claims when the advance resides solely in a mental process is more than good patent policy. It is mandated by an interpretation of section 101 in light of the Patent Act as a whole and its disclosure provisions in particular. Importantly, this argument cuts across the grain of conventional wisdom about the mental steps and printed matter doctrines. One reason why these doctrines have failed to take root in the lower courts is an erroneous belief that they are not anchored in the Patent Act. *In re Musgrave*, 431 F.2d 882, 890 (C.C.P.A. 1970) (mental steps); *Gulack*, 703 F.2d at 1385 n.8 (printed matter).

A. Section 101 Must Be Construed in Light of the Statutory Disclosure Provisions

The interpretation of section 101 discussed here differs from this Court's previous interpretations of section 101 in that it relies heavily on the canon of structural statutory interpretation. The plain meaning of a statute must be determined not by examining the statute in isolation but also by viewing a statute in light of "the structure and purpose of the Act in which it occurs." *New York State Conf. of Blue Cross & Blue Shield Plans*, 514 U.S. 645, 655 (1995).

This Court has repeatedly recognized the importance of patent law's disclosure provisions in the structure of the patent regime as a whole. 35 U.S.C. §§ 112, 122(b) (2006) (codifying the disclosure requirements). Patent protection is a "bargain" in which inventors and the public exchange valuable rights. *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 63 (1998); *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 150-51 (1989). The public grants an inventor limited rights to exclude from the claimed embodiments of an invention, and, as "*quid pro quo* of the right to exclude," the inventor discloses newly discovered information that she otherwise could have kept secret. *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 484 (1974); *see also J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred International, Inc.*, 534 U.S. 124, 142 (2001); *Bonito Boats*, 489 U.S. at 150-51. One function of the disclosure is to encourage the public to use the disclosed knowledge to design around the patent and advance the art, even during the term of the patent. "When a patent is granted and the information contained in it is circulated to the general public and those especially skilled in the trade, such additions to the general store of knowledge . . . stimulate ideas and the eventual development of further significant advances in the art." *Kewanee Oil*, 416 U.S. at 481; *see also* Donald S. Chisum, *Chisum on Patents* § 7.01 (2009) ("[O]n issuance [ ] the patent immediately increases the storehouse of public information available for further research and innovation.").[2] The patentee's obligation to disclose information and make it free for all comers to use as information from the moment of publication is an obligation that runs against the inventor's self interest. Unlike in copyright law, "immediate disclosure" is a "price" that "is *exacted from*" the patentee in return for patent protection. *Eldred v. Ashcroft*, 537 U.S. 186, 216 (2003). In sum, the Patent Act is not only about rights to exclude. At a deep structural level, it is premised on a "duality of claiming and disclosing." Graeme B.

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[2] A distinct function of the disclosure is to ensure that the public can practice the claimed invention after a patent expires. *Grant v. Raymond*, 31 U.S. (6 Pet.) 218, 247 (1832).

Dinwoodie & Rochelle Cooper Dreyfuss, *Patenting Science: Protecting the Domain of Accessible Knowledge, in The Future of the Public Domain: Identifying the Commons in Information Law* 191, 193 n.4 (2006). Each side of the duality promotes the "Progress of . . . useful Arts" through a different mechanism. U.S. Const. art. I, § 8, cl. 8. Claims create rights to exclude that provide an incentive for self-interested individuals to invest time and money in the inventive process. Disclosures create an immediately available public domain of newly discovered information and knowledge that greases the wheels of future progress.

Section 101 states that a "process, machine, manufacture, or composition of matter" may be patented. 35 U.S.C. § 101 (2006). An interpretation of section 101 in light of patent law's disclosure provisions demonstrates that Congress did not intend for newly discovered mental processes to be statutory subject matter. Patent claims in which the advance resides solely in a mental process are by definition inventions only because they include acts of thinking about the newly discovered information disclosed in a patent specification. Simply put, such claims describe the public's use of the disclosure as knowledge. Congress, however, intended specifications to contribute to "the general store of knowledge" and remain beyond patentees' private control. *Kewanee Oil*, 416 U.S. at 481. By negative implication, Congress therefore could not have intended to sanction patent claims in which the advance resides solely in an act of thinking about the information disclosed in a specification. By erecting a bar on claims when an advance resides solely in a mental process, the mental steps and printed matter doctrines enforce patentees' statutory disclosure obligations and protect the public's side of the patent bargain. If claims to newly invented mental processes were to recite patent-eligible inventions, the disclosure side of the duality of claiming and disclosing would be fatally undermined. Disclosures would not be "exacted from" patentees. *Eldred*, 537 U.S. at 216. Patentees would be able to attain the absurd result of privatizing the value of the disclosed knowledge that the patent-law bargain requires them to publicize. *Clinton v. City of New York*, 524 U.S. 417, 429 (1998) (interpreting a statute to avoid an absurd result). When construed in light of the disclosure provisions, the term "process" in section 101 does not encompass claims in which the advance resides solely in a mental process, and the terms "manufacture" and "machine" do not encompass claims in which the advance resides entirely in the intelligibility of printed matter to the human mind.

Patent law's other validity doctrines do not serve this important structural role. Even standing alone, newly invented mental processes will frequently be useful, novel, nonobvious, and sufficiently described. 35 U.S.C. §§ 101, 102, 103, 112 (2006) (codifying the utility, novelty, nonobviousness and sufficient-description doctrines). If claims in which the advance resides solely in a mental process are to remain beyond the reach of patent protection, it is the section

101 doctrine of patent eligibility that must do the work.

B. The 1952 Patent Act Approved of the Mental Steps and Printed Matter Doctrines

The 1952 Patent Act supports an interpretation of section 101 under which the advance over the prior art cannot reside in a newly invented mental process. Section 101 should not categorically exclude technologies that were unforeseen in 1952 because "Congress intended statutory subject matter to 'include anything under the sun that is made by man.'" *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (quoting S. Rep. No. 82-1979, at 5 (1952); H. R. Rep. No. 82-1923, 82d Cong., at 6 (1952)). Mental processes, however, are not unforeseen, post-1952 developments. Lower courts had considered and rejected the patentability of mental processes prior to the passage of the Patent Act: cases adopting both the mental steps and printed matter doctrines had already been decided and remained valid in 1952. *See, e.g.*, *In re Shao Wen Yuan*, 188 F.2d 377 (C.C.P.A. 1951) (mental steps); *Abrams*, 188 F.2d at 166 (same); *In re Russell*, 42 F.2d 668 (C.C.P.A. 1931) (printed matter); *U.S. Credit Sys. Co. v. Am. Credit Indem. Co.*, 59 F. 139, 143 (2d Cir. 1893) (same). "When Congress approved the addition of the term 'process' to the categories of patentable subject matter in 1952, it incorporated the definition of 'process' that had evolved in the courts." *In re Schrader*, 22 F.3d 290, 295 (Fed. Cir. 1994). "Analysis of the eligibility of a claim of patent protection for a 'process' did not change with the addition of that term to § 101." *Diehr*, 450 U.S. at 184. When Congress intended to change the judicial precedent prior to 1952 on patent eligibility, it did so expressly. For example, Congress altered the scope of statutory processes by expressly specifying that new uses for known compositions of matter are patent eligible. *Compare* 35 U.S.C. § 100(b) (2006), *with Old Town Ribbon & Carbon Co. v. Columbia Ribbon & Carbon Mfg. Co.*, 159 F.2d 379, 382 (2d Cir. 1947). Congress thus approved of the mental steps doctrine as a limit on the definition of a statutory "process" when it enacted the 1952 Patent Act without mentioning the mental steps doctrine, and it approved of the printed matter doctrine as a limit on the definition of a statutory "machine" or "manufacture" as well.

C. Serious First Amendment Problems Require a Narrow Construction of Section 101

The First Amendment protects not only freedom of speech but also freedom of thought. *Wooley v. Maynard*, 430 U.S. 705, 714 (1976) ("freedom of thought"); *Thomas v. Collins*, 323 U.S. 516, 531 (1945) ("freedom of mind"). Neither this Court nor any lower court has directly addressed whether a patent claim that grants a private citizen a right to exclude others from expressing or thinking about newly discovered, publicly accessible information runs afoul of the First Amendment. *But cf. Bilski*, 545 F.3d at 1008 (Mayer, J., dissenting) ("By adopting overly expansive standards for patentability, the government enables private parties to impose broad and unwarranted burdens on speech and the free flow of ideas."). In the course of overruling the mental steps doctrine, the CCPA acknowledged, but never resolved, the First Amendment issue. *In re Prater*, 415 F.2d 1393, 1400 n.20 (C.C.P.A. 1969).

It is in part because the idea/expression dichotomy prevents copyrights from encompassing ideas that the copyright laws do not routinely run afoul of the First Amendment. *Harper & Row Publishers, Inc. v. Nation Enters.*, 471 U.S. 539, 556 (1985). Without the mental steps and printed matter doctrines, patent law has no similar provision to head off a looming conflict with First Amendment rights.

Given the serious constitutional problems raised by patent claims in which the advance resides solely in a mental process, this Court should embrace the structural interpretation of section 101 discussed above in Section I.A that avoids the problems. *Edward J. DeBartolo Corp. v. Florida Gulf Coast Bldg. & Constr. Trades Council*, 485 U.S. 568, 575 (1988) ("[W]here an otherwise acceptable construction of a statute would raise serious constitutional problems, the Court will construe the statute to avoid such problems unless such construction is plainly contrary to the intent of Congress.").

II. The Mental Steps and Printed Matter Doctrines Are Both Administrable and Rooted in Historical Patent Practice

A bar on patent claims when the advance resides solely in a mental process is an administrable rule with strong roots in twentieth century patent practice. It is simply a refinement of the historical mental steps doctrine as articulated in *In re Abrams*, 188 F.2d 165 (C.C.P.A. 1951), and the contemporary printed matter doctrine.

A. The Historical Mental Steps Doctrine Restricted the Patent Eligibility of Method Claims

The historical mental steps doctrine prevented the issuance of any method claim in which the advance resided in a mental process. For example, the CCPA in *Abrams* applied the following rule to determine the patentability of a claim reciting a mental process under section 101:

> If a method claim embodies both positive and physical steps as well as so-called mental steps, yet the alleged novelty or advance over the art resides in one or more of the so-called mental steps, then the claim is considered unpatentable. . . .[3]

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[3] This is only rule two of what became known as the three rules of *Abrams*. *Abrams*, 188 F.2d at 166. The CCPA subsequently characterized the discussion of the three rules in

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188 F.2d at 166; *see also In re Shao Wen Yuan*, 188 F.2d 377 (C.C.P.A. 1951). A court applying the mental steps doctrine as articulated in *Abrams* must divide a method claim into mental and extra-mental steps. If the extra-mental steps of a claim describe a novel, nonobvious, and useful invention, the claim is patent eligible even if it also recites mental steps. Here, any mental steps are harmless to the public's interests. They simply limit the scope of an otherwise valid claim. However, if the advance over the prior art resides solely in the mental steps, the claim is not eligible for patent protection under section 101. Here, the inventor has invented only the act of thinking about the newly discovered information revealed in the patent specification.[4] In the common parlance of patent law, *Abrams* employs a "point of novelty" analysis. *Musgrave*, 431 F.2d at 889.

Abrams as mere dicta intended to demonstrate that "even if, arguendo, the court had adopted [the rules], [the patent applicant] would still not have prevailed. . . ." *In re Prater*, 415 F.2d 1378, 1386 (C.C.P.A. 1968), *modified on rehearing*, 415 F.2d 1393 (C.C.P.A. 1969). However, it is difficult to read *Abrams* as not relying on rule two.

[4] Combination arguments must be carefully scrutinized so that they do not allow an end-run around the limits on patent eligibility imposed by the mental steps doctrine. For example, assume that a method claim in a patent application recites steps A and B, that A alone is a prior-art, extra-mental step, and that B alone is a novel mental step. The applicant may argue that it is the combination of A and B, not simply B, that is novel. To protect the public's interest in the public domain of the disclosure, this type of combination argument must not succeed.

Two decades after *Abrams*, a panel of the CCPA abandoned the mental steps doctrine in *In re Musgrave*, 431 F.2d 882, 889-93 (C.C.P.A. 1970). *Musgrave* replaced the mental steps doctrine with the technological arts test for patent eligibility. *Id.* Oddly, the Federal Circuit has since abandoned the technological arts test established in *Musgrave*, *Bilski*, 545 F.3d at 960, but it has not revisited *Musgrave* insofar as *Musgrave* overrules the mental steps doctrine.

If the section 101 doctrine of patent eligibility is to protect the public's side of the disclosure bargain, this Court must overrule *Musgrave* insofar as it stands broadly for the abandonment of the mental steps doctrine.[5] Disclosures must be additions to "the general store of knowledge" and must be free for all to use as knowledge from the moment they are published. *Kewanee Oil*, 416 U.S. at 481. An inventive mental step is by definition nothing more than the human act of thinking about the information disclosed in a patent specification. If inventors could patent inventive mental steps, they could shirk their disclosure obligations: they could reveal information to the public but privatize its value by charging a fee for the public to think about it.

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[5] *Musgrave* and other cases of its era were fundamentally about the patentability of claims to programmed computers and computer-executed processes. Insofar as *Musgrave* stands narrowly for the principle that steps limited to computer-executed processes are not *per se* mental steps, its holding is unobjectionable. *Cf. In re Benson*, 441 F.2d 682 (C.C.P.A. 1971), *rev'd on other grounds*, 409 U.S. 64 (1972) (upholding a claim under the mental steps doctrine because it was limited in scope to computer-execution of the claimed mathematical processes).

A structural theory of patent eligibility mandates the adoption of the mental steps doctrine and its point of novelty approach, not a narrow, formalistic bar on claims in which all steps can be performed in the human mind. *Cf. In re Comiskey*, 554 F.3d 967, 977-80 (Fed. Cir. 2009) (acknowledging that entirely mental claims are not patentable subject matter). A patent claim that describes a prior-art, extra-mental technology in conjunction with a newly invented mental process and a patent claim that describes only the newly invented mental process are equally detrimental to the public's ability to think freely about the information disclosed in a patent specification. Patent rights cannot interfere with the public's right to practice the unpatented prior art. Under the Copyright and Patent Clause of the Constitution, "Congress may not authorize the issuance of patents whose effects are . . . to restrict free access to materials already available." *Graham v. John Deere Co.*, 383 U.S. 1, 6 (1966). The doctrine of patent eligibility must therefore invalidate claims that privatize the public's ability to think about the information disclosed in the patent specification, even when that thinking occurs in conjunction with the use of a prior-art technology. To protect the public's side of the statutory disclosure bargain, section 101 must restrict patent eligibility whenever the point of novelty of the claimed method resides in the human mind, even if the method recites prior-art, extramental steps as well.

Understanding the role of mental steps doctrine in protecting the public's side of the disclosure bargain also points the way to a more precise definition of mental step. One concern expressed by the CCPA in *Musgrave* was that an overly broad definition of a mental step could encompass any step that requires brain activity. *Musgrave*, 431 F.2d at 889-93; *cf. Lab. Corp.*, 548 U.S. at 134 (Breyer, J., dissenting from the dismissal of the writ of certiorari as improvidently granted) (implying that it is difficult to administer a "mental processes" limitation on patentable subject matter because "all conscious human action involves a mental process"). To implement a structural theory of patent eligibility and protect the public domain of knowledge created by the disclosure, the mental steps that are of concern under the mental steps doctrine should be limited to steps that occur entirely within the human mind. Mental steps should encompass only the human acts of reasoning and understanding that are necessary to the public's use of the "general store of knowledge" as knowledge that patent disclosures are supposed to support. *Kewanee Oil*, 416 U.S. at 481. Most significantly, steps reciting physical human interaction with the world outside of the mind, such as bodily motion (e.g., "pulling said lever" or "mixing chemicals A and B"), should not sound alarm bells under the mental steps doctrine.[6] *Cf. Ex parte McNabb*, 127 U.S.P.Q. 456, 457-58 (Pat. Off. Bd. App. 1959) (declining to treat the brain activity required for motor control as a mental step).

However, if a step in a method claim is broad enough to encompass purely mental reasoning, the step must be labeled a mental step even if it encompasses extra-mental processes as well. A broad claim encompassing both mental and extra-mental performance of a method is equally detrimental to the public domain of the disclosure as a narrow claim encompassing only mental performance of the method. Confusion on this point unfortunately contributed to the lack of clarity in the historical mental steps doctrine and its abandonment by the CCPA. *Musgrave*, 431 F.2d at 889-90 n.4.

B. The Contemporary Printed Matter Doctrine Restricts the Patent Eligibility of Manufacture and Machine Claims

Although it is not always recognized as having this effect, the printed matter doctrine prevents patent protection for machines and manufactures from extending into the human mind. It bars the patenting of "claims defining as the invention certain novel arrangements of printed lines or characters, useful and intelligible only to the human mind." *In re Lowry*, 32 F.3d 1579, 1583 (Fed. Cir. 1994) (quoting *In re Bernhart*, 417 F.2d 1395, 1399 (C.C.P.A. 1969)). Inversely, "the printed matter cases have no factual relevance where 'the invention as defined by the claims *requires* that the information be processed not by the mind but by a machine, the computer.'" *Id.* In sum, machines and manufactures that are different from the prior art only because they mean something new to a human mind – i.e., only because of the mental processes that the mind performs when it attributes meanings to them – are not eligible for patent protection.[7]

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[6] Methods that simply add the verbal expression or tangible recording of the result of a mental process as a claim limitation are not eligible for patent protection under a combination of the mental steps and printed matter doctrines. Therefore, claims to thought and speech should usually be treated just like claims to thought. *But cf. infra* note 17.

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[7] The default rule of the printed matter doctrine is sometimes described as barring the patenting of "information recorded in [a] substrate or medium" when it is the "content of the information" that is the invention. Chisum, *supra* at § 1.02[4]. This information-centric formulation of the printed matter doctrine is misleading. Many things are readily viewed as information and yet are patentable under the printed matter doctrine because they interface with devices and organisms through mechanical processes and the locus of the invention is therefore not in their comprehension by a human mind. *In re Fisher*, 421 F.3d 1365 (Fed. Cir. 2005) (addressing the patentability of DNA under the utility doctrine, not the doctrine of patent eligibility); *In re Beauregard*, 53 F.3d 1583 (Fed. Cir. 1995) (acquiescing to the PTO's decision that software-on-disk claims can be eligible for patent protection under section 101).

The printed matter doctrine employs a "patentable weight" analysis: the novelty and nonobviousness of the meaning that a worldly thing triggers in a human mind gets no weight in the determination of whether the claim is a patentable advance over the prior art.[8] *In re Miller*, 418 F.2d 1392, 1395-96 (C.C.P.A. 1969); *Gulack*, 703 F.2d at 1385. For example, in *In re Ngai*, 367 F.3d 1336, 1338-39 (Fed. Cir. 2004) (*per curiam*), the Federal Circuit held that "the *content* of the instructions" on how to use chemicals in a kit could not make the kit novel in relation to the prior art. It reaffirmed the rule that "the printed matter will not distinguish the invention from the prior art in terms of patentability." *Id.* at 1339 (quoting *Gulack*, 703 F.2d at 1385); *see also King Pharms., Inc. v. Eon Labs, Inc.*, 593 F.Supp.2d 501, 514 (E.D.N.Y. 2009) (invalidating method claims in which the advance resided in the placement of a printed label advertising the metabolic effect of a chemical). The patentable weight analysis of the printed matter doctrine mirrors the point of novelty analysis of the mental steps doctrine. Patentees can recite mental processes in method claims, but the locus of the invention cannot reside in a mental process. Similarly, patentees can recite printed matter as a limitation on a claim to manufacture or machine, but they cannot justify the patentability of the claim with reference to the inventive nature of the meaning that the printed matter has to a human mind.[9]

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[8] The printed matter doctrine is commonly described as having an "exception" under which printed matter can be given patentable weight if the printed matter is functionally related to the substrate. *Gulack*, 703 F.2d at 1385; *Cincinnati Traction Co. v. Pope*, 210 F. 443, 446-47 (6th Cir. 1913). The functional-relation "exception" is not an exception: it simply captures one subset of cases in which the invention does not reside in the novelty and nonobviousness of the meaning that a human mind attributes to the printed matter.

The limit on patent eligibility established by the printed matter doctrine is necessary to protect the disclosure side of the duality of claiming and disclosing on which the patent regime is premised. To protect the "general store of knowledge" created by disclosures from overreaching claims, *Kewanee Oil*, 416 U.S. at 481, the printed matter doctrine must prevent inventors from relying on the informational content of human-readable symbols to prove that a manufacture or machine represents an advance over the prior art. But for the printed matter doctrine, patentees could literally patent their disclosures: they could exclude the public from printed copies of their patent specifications. Furthermore, the patentable weight analysis of the printed matter doctrine is essential if the printed matter doctrine is to serve as this function. It is not enough to prevent the patenting of claims describing printed matter in isolation.

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[9] The patentable weight analysis of the printed matter doctrine was initially created by analogy to the point of novelty analysis of the mental steps doctrine. *Ex parte Jenny*, 130 U.S.P.Q. 318, 320 (Pat. Off. Bd. App. 1960). Today, ironically, the printed matter doctrine and its patentable weight analysis continue to limp along but the mental steps doctrine and its point of novelty analysis have been abandoned.

The statutory locus of the printed matter doctrine has become highly unstable. Historically, the printed matter doctrine was lodged exclusively in Section 101. *Russell*, 42 F.2d at 669. Today, the Federal Circuit applies the printed matter doctrine as a facet of the novelty doctrine of section 102 or the nonobviousness doctrine of section 103 when a claim describes printed matter in conjunction with things that are conventionally eligible for patent protection under section 101. *Ngai*, 367 F.3d at 1338-39 (a kit of chemicals plus instructions); *Gulack*, 703 F.2d at 1384-87 (writing on a circular band). Yet, in cases in which the claim describes printed matter *per se*, the Federal Circuit and the PTO continue to apply the printed matter doctrine as a component of the section 101 patent-eligibility analysis. *In re Ockman*, 833 F.2d 1023 (Fed. Cir. 1987) (unpublished opinion); *Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility*, 1300 OG 142 (Nov. 22, 2005) (stating that "nonfunctional descriptive material" is not statutory subject matter under section 101, even when it is recorded on a computer-readable medium). This awkward straddling of distinct statutory provisions is pointless. *Cf. In re Nuijten*, 500 F.3d 1346, 1366 (Fed. Cir. 2007) (Linn, J., concurring-in-part and dissenting-in-part) ("As a doctrinal matter, the PTO [when it applies the printed matter doctrine] should not look to § 101 sometimes and § 103 at other times to accomplish essentially the same end."). It is a byproduct of the lower courts' neglect of the printed matter doctrine.

C. The Mental Steps and Printed Matter Doctrines Are Two Sides of the Same Coin

Today, the Federal Circuit continues to apply the printed matter doctrine, but not the mental steps doctrine. This status quo is highly suspect as the mental steps and printed matter doctrines are two sides of the same coin: they both address the eligibility of mental processes for patent protection. It makes no sense to disregard the inventiveness of printed symbols when the advance resides entirely in their intelligibility to the human mind, yet to credit the inventiveness of the mental processes that are premised on human comprehension of that very printed matter. The two doctrines should rise and fall together. Patent eligibility should be uniformly construed so that the knowledge disclosed to the public in the patent specification cannot distinguish a claim from the prior art, whether the claim describes the knowledge directly in its mental form or indirectly in the form of signs that are semiotically meaningful to the human mind.

III. The Claim as a Whole Approach to Patent Eligibility Articulated in *Diehr* Does Not Apply to Claims to Mental Processes

In *Diehr*, this Court established a claim "as a whole" approach to patent eligibility for claims to programmed computers executing mathematical algorithms. *Diehr*, 450 U.S. at 192. At first glance, the claim as a whole approach articulated in *Diehr* may appear to pose an obstacle to the adoption of a bar on claims when the advance resides solely in a mental process. The point of novelty analysis of the mental steps doctrine and the patentable weight analysis of the printed matter doctrine require courts to, first, identify the mental processes described by a claim and, second, invalidate any claim in which the advance over the prior art resides solely in a mental process. In contrast, *Diehr* warns against performing a section 101 analysis by dividing a claimed method into its discrete steps, assuming that any step that recites a computer executing a mathematical algorithm is part of the prior art, and querying whether the remaining steps represent a patentable advance over the prior art. *Id.* at 188-91.[10] In *Bilski*, the Federal Circuit interpreted this Court's precedents on section 101 to mandate a blanket application of claim as a whole approach to questions of patent eligibility, leaving no space for the mental steps and printed matter doctrines.[11] *Bilski*, 545 F.3d at 958-59.

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[10] Some language in *Parker v. Flook*, 437 U.S. 584, 594 (1978), suggests that the claim as a whole and point of novelty approaches are compatible: "Respondent's process is unpatentable under § 101, not because it contains a mathematical algorithm as one component, but because once that algorithm is assumed to be within the prior art, the application, considered as a whole, contains no patentable invention."

Contrary to the Federal Circuit's analysis in *Bilski*, *Diehr* does not preclude the adoption of the mental steps and printed matter doctrines. In *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972), this Court discussed three conceptually distinct categories of phenomena that are not eligible for patent protection: "[p]henomena of nature, though just discovered, mental processes, and abstract intellectual concepts." This Court's trilogy of cases addressing the eligibility of computer software for patent protection – *Benson*, *Parker v. Flook*, 437 U.S. 584 (1978), and *Diehr* – all dealt with claims to newly discovered phenomena of nature.[12] Not one of them addressed a

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[11] *Bilski* addressed the statutory definition of a section 101 "process." *Bilski*, 545 F.3d at 951. It is therefore possible that the Federal Circuit did not intend for *Bilski*'s broad interpretation of the claim as a whole test for patent eligibility to affect the printed matter doctrine. However, section 101 does not recognize formalistic distinctions between product and process claims. *Benson*, 409 U.S. at 67-68. Furthermore, the printed matter doctrine does affect the scope of method claims that recite steps such as "reading printed matter" or "applying printed matter as a label." *Cf. King Pharms.*, 593 F.Supp.2d at 514 (invalidating method claims in which the advance resided in the placement of a printed label advertising the newly discovered metabolic effect of a chemical).

[12] Phenomena of nature are alternatively referred to in part or in whole as "principles of nature," *Diehr*, 450 U.S. at 189 n.12, "natural phenomena," "laws of nature," and "scientific

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claim to a mental process performed by a human mind. The claim as a whole approach developed in these cases and articulated in *Diehr* therefore governs the patent eligibility of natural phenomena but not mental processes.

Phenomena of nature and mental processes are distinct limits on the reach of patentable subject matter. *Cf. Bilski*, 545 F.3d at 952 (querying whether a claim describes either "a fundamental principle . . . or a mental process"). Phenomena of nature are "relationships that have always existed." *Flook*, 437 U.S. at 593 & n.15. They are "manifestations . . . of nature" simply discovered by humans, not invented by them. *Chakrabarty*, 447 U.S. at 309 (quoting *Funk Bros. Seed Co. v. Kalo Co.*, 333 U.S. 127, 130 (1948). Newton's law of gravity and Einstein's theory of relativity are canonical examples of laws of nature: they governed the physical workings of the world long before Newton and Einstein discovered them. *Chakrabarty*, 447 U.S. at 309. In contrast, mental processes are not simply discovered. They are products of human ingenuity: when someone performs a new act of thinking, she is not merely performing a process that has always been performed in nature. The things about which humans think may be natural phenomena or laws of nature. For example, mental processes based on Einstein's theory

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principles," *Flook*, 437 U.S. at 593 & n.15. This brief uses these terms interchangeably.

of relativity or Newton's law of gravity are clearly thoughts about laws of nature.[13] However, mental processes may also pertain to relationships other than laws of nature, such as the properties of a human-made chemical compound or a social convention that describes human interaction in civil society.[14] Inversely, many claims that implicate newly discovered laws of nature do not describe mental processes. *Mackay Radio & Telegraph Co. v. Radio Corp. of America*, 306 U.S. 86, 94-95 (1939) (holding a claim to an antenna patentable); *Funk Bros.*, 333 U.S. at 130 (holding a claim to a combination of bacteria unpatentable).

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[13] When mental processes are thoughts about laws of nature, the section 101 doctrines applicable to both laws of nature and mental processes limit the scope of patent-eligible subject matter. However, because the mental steps and printed matter doctrines are the more restrictive of the doctrines, they will usually be dispositive at the margin.

[14] One reason to recognize a distinction between the section 101 doctrine that applies to principles of nature and the section 101 doctrine that applies to mental processes is that mental processes about principles of nature and mental processes about man-made or social phenomena should receive identical treatment. A structural theory of patent eligibility holds that thought about the information revealed in a patent specification is not statutory subject matter. Under such a theory, new and useful acts of thinking about the properties of newly discovered natural chemicals and newly discovered man-made chemicals are treated identically. *But see Prometheus Laboratories, Inc. v. Mayo Collaborative Services*, 2008 WL 878910, at *6-*9 (S.D. Cal. Mar. 28, 2008) (invalidating a claim reciting an inventive mental step under section 101 only because the claimed thought employed a "natural" correlation).

The mathematical algorithms or formulae at issue in *Flook* and *Diehr* are laws of nature or their equivalents, so *Flook* and *Diehr* clearly govern the eligibility of laws of nature for patent protection.[15] *Diehr*, 450 U.S. at 187, 191; *Flook*, 437 U.S. at 590. However, none of the claims at issue in *Benson*, *Flook* and *Diehr* encompassed mental processes in any meaningful way. At least some of the claims in *Benson* could in theory "be performed without a computer," *Benson*, 409 U.S. at 67, but they "had no substantial practical application except in connection with a digital computer." *Id.* at 71. In *Flook*, this Court noted that, "[a]lthough the [claimed] computations can be made by pencil and paper calculations, the abstract of disclosure makes it clear that the formula is primarily useful for computerized calculations producing automatic adjustments in alarm settings." *Flook*, 437 U.S. at 586. In *Diehr*, this Court granted certiorari only "to determine whether a process for curing synthetic rubber which includes in several of its steps the use of a mathematical formula and a programmed digital computer is patentable subject matter under 35 U.S.C. § 101." *Diehr*, 450 U.S. at 177. Furthermore, neither *Flook* nor *Diehr* even mentions "mental processes" as unpatentable subject matter. The claim as a whole approach to patent eligibility articulated in *Diehr* need not govern claims describing mental processes. *Bilski* presents this Court with a case of first impression concerning the eligibility of mental processes for patent protection.

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[15] In *Benson*, this Court referred to the mathematical algorithm as an "idea." *Benson*, 409 U.S. at 72.

There is nothing in the statutory logic of section 101 that requires the claim as a whole approach be extended from laws of nature to mental processes. *Diehr* supports the claim as a whole approach by noting that section 101 and section 102 are distinct provisions and that the word "new" in section 101 is not the statutory locus of the novelty doctrine. *Diehr*, 450 U.S. at 189-90. Viewed in this manner, the determination of what constitutes statutory subject matter under section 101 is "wholly apart from" the determination of what constitutes a novel claim under section 102. *Id.* at 190 (quoting *In re Bergy*, 596 F.2d 952, 961 (C.C.P.A. 1979)).[16] In contrast, because the mental steps and printed matter doctrines derive from a reading of the text of section 101 in light of the structure of the Patent Act as a whole, an approach that incorporates concepts from both section 101 and sections 102 and 103 is to be expected.

Practically speaking, some variant of the claim as a whole approach to patent eligibility articulated in

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[16] The CCPA supported its statement in *Bergy* with citations to a number of patent treatises. *Bergy*, 596 F.2d at 960. Some of these treatises were written during the heyday of the mental steps doctrine, suggesting that the separate and distinct nature of the statutory subject matter and novelty requirements is perfectly consistent with a point of novelty for claims describing mental processes.

Diehr may be necessary when dealing with claims that implicate newly discovered laws of nature. As *Diehr* emphasized, if a point of novelty approach were to be "carried to its extreme" and if all claimed inventions were to be reduced to their "underlying principles of nature," it would "make all inventions unpatentable because all inventions can be reduced to underlying principles of nature which, once known, make their implementation obvious." *Diehr*, 450 U.S. at 189 n.12. However, a point of novelty or patentable weight analysis for claims implicating mental processes does not undermine claims that lie at the core of traditionally patentable subject matter. Traditional claims in the chemical and biological arts often implicate principles of nature (as do more recent claims in the software arts), but they rarely encompass mental processes. The mental steps and printed matter doctrines bring point of novelty and patentable weight approaches to bear on questions of patent eligibility only in the limited situations in which they are required to protect the deep structure of the Patent Act and prevent the privatization of patent disclosures.

IV. Bilski's Claim 1 May Violate the Mental Steps Doctrine

Whether Bilski's claim 1 violates the mental steps doctrine of *Abrams* cannot be determined based on the current record. Claim 1 recites three steps: (a) "initiating" a first series of transactions with the consumers of a commodity, (b) "identifying" entities "having a counter-risk position to said consumers," and (c) "initiating" a second series of transactions with the entities identified in step (b) to balance the risk of the first series of transactions. *Bilski*, 545 F.3d at 949. The acts of "initiating" the transactions in steps (a) and (c) are presumptively not purely mental steps. Contracts cannot be created merely by thinking; they are legally binding obligations that come into existence only through the performance of extroverted, non-cognitive conduct.[17] If Bilski can prove that the web of interpersonal legal obligations made by steps (a) and (c) is a novel and nonobvious method in and of itself, then the mental steps doctrine should not stand in the way of patent protection for Bilski's claim. However, step (b) reads on an act of human reasoning, namely "identifying" parties "having a counter-risk position to said consumers." This purely cognitive act is nothing more than the public's use of the disclosure as knowledge:

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[17] A contract can be created through speech or written expression. In most circumstances, claims combining inventive mental thought and extra-mental speech are not eligible for patent protection under a combination of the mental steps and printed matter doctrines. However, the speech that forms a contract is an unusual type of expression because it "does" something more than simply express beliefs: it creates legal obligations. Linguists refer to this unusual type of expression as a "performative utterance." J.L. Austin, *How to Do Things with Words* 5 (2nd ed. 1975). "I do" in a marriage ceremony is an intuitive example of a performative utterance. *Id.* This brief presumes that performative utterances should be treated like conventional extra-mental actions, not like ordinary expression.

Bilski's specification provides mathematical relationships that can be used to identify these parties mentally. *Br. for Appellee Director of the United States Patent and Trademark Office* at 7-8, *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (No.2007-1130). The prior art may include a transaction in which a party performs steps (a) and (c) without realizing that the transaction hedges consumption risk. If true, Bilski's claim 1 would violate the mental steps doctrine because the mental act of "identifying" would be the sole locus of the invention in the claim. Under the patent bargain, the public should have a privilege to use the unpatented prior art while engaging in this purely mental act of thinking about the information revealed in Bilski's specification.

V. This Court Should Seize this Opportunity to Address Patent Protection for Mental Processes

In *Bilski*, the Federal Circuit announced the machine-or-transformation test for patent eligibility. 545 F.3d at 961-63. If this Court agrees with the Federal Circuit that the machine-or-transformation test establishes the outer limit of patentable subject matter, this Court may not need to reach the mental steps doctrine to determine the patent eligibility of Bilski's claim 1.[18] Nonetheless, this Court should seize

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[18] This brief takes no position on whether the Federal Circuit's machine-or-transformation test states a necessary

(Continued on following page)

this opportunity to address the ineligibility of mental processes for patent protection for four reasons.

First, many of the methods excluded from patent eligibility under the machine-or-transformation test describe business methods. Many business method claims are also mental process claims, so this Court has good reason to address the two topics at the same time.

Second, the machine-or-transformation test is conceptually bankrupt when brought to bear on claims in which the advance resides solely in a mental process. With respect to process claims, the machine-or-transformation test focuses on the tangibility of the claimed process as a whole, requiring the process to be either tied to a particular (tangible) machine or responsible for transforming a (tangible) article into a different state or thing.[19] *Id.* For policy reasons, human brains will not be considered particular machines, and mental processes will not be viewed as transforming articles. Thus, the patent eligibility of a method claim reciting mental processes will turn on the tangibility

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condition for patent eligibility. It argues only that the test is not a sufficient or "sole" condition. *Bilski*, 545 F.3d at 955-56.

[19] The machine-or-transformation test is entirely nonsensical when brought to bear on claims to manufactures that describe printed matter. A manufacture – or even printed matter *per se* – is by default tangible. *But cf. Nuijten*, 500 F.3d at 1356-57 (holding that a "signal" is insufficiently tangible to be a manufacture).

of the extra-mental steps. This result makes no sense: if the advance over the prior art is simply an act of thinking about the information disclosed in a patent specification, the tangibility of the prior art recited in the claim along with the act of thinking should be irrelevant. *Cf. Lab. Corp.*, 548 U.S. at 136 (Breyer, J., dissenting from the dismissal of the writ of certiorari as improvidently granted) ("Claim 13's process instructs the user to (1) obtain test results and (2) think about them. Why should it matter if the test results themselves were obtained through an unpatented procedure that involved the transformation of blood?").

The machine-or-transformation test may incorporate the mental steps doctrine through a back door because it allows courts to disregard "insignificant" extra-mental steps and extra-mental steps that do not impose "meaningful limits on the claim's scope." *Bilski*, 545 F.3d at 961-62. Extra-mental steps could, in theory, be *per se* insignificant whenever the advance resides solely in mental steps, but the Federal Circuit has disavowed this rule. *Id.* at 960 (noting that Federal Circuit precedent does not follow a "§ 101 test that bars any claim reciting a mental process that lacks significant 'physical steps'"). A back-door adoption of the mental steps doctrine is problematic because it sanctions a game of hide-the-ball: it focuses courts on tangibility when tangibility is not the important issue. Furthermore, the mental steps doctrine offers a bright-line rule for determining patent eligibility, whereas the identification of insignificant extra-mental steps leads to greater uncertainty.

Third, claims that violate the mental steps doctrine are problematic because the PTO and the courts must grapple with two unique problems in order to issue and enforce them. First, if the advance over the prior art is a mental process, then the mental processes of past thinkers define the relevant prior art. The PTO or an alleged infringer must somehow look into the minds of the practitioners of the prior art to prove the invalidity of a claim reciting a cognitive operation at the point of novelty under sections 102 and 103. The compilation of a prior art of subjective acts of thinking is fraught with difficulty. The mental steps and printed matter doctrines eliminate the need to compile a prior art comprised of acts of thinking. Second, claims that violate the mental steps doctrine may frequently be performed reflexively because the public cannot willfully control what it thinks when it practices the prior art. *Lab. Corp.*, 548 U.S. at 130-31 (Breyer, J., dissenting from the dismissal of the writ of certiorari as improvidently granted) (noting that doctors "automatically" performed the mental act of correlating recited in a method claim); Kevin Emerson Collins, *Constructive Nonvolition in Patent Law and the Problem of Insufficient Thought Control*, 2007 Wisc. L. Rev. 759, 760-61 (2007) (noting that a dentist must avoid looking in patients' mouths to avoid infringement of a test-and-correlate claim based on the correlation between gum inflammation and heart disease). The reading of a patent specification is supposed to help the reader avoid infringement, but, with respect to a claim that violates the mental steps doctrine, it may cause infringement because the reader cannot help but think about the disclosed information after having read it. The fairness of patent protection is premised on the fact that a patented invention is an option above and beyond the prior art. However, if this Court does not recognize a bar on claims when the advance resides solely in a mental process, reflexive infringement of patents claiming novel cognitive acts will take away the public's ability to practice the prior art freely.

Fourth, the eligibility of mental processes for patent protection presents an urgent concern in contemporary patent practice. The PTO and the lower courts are sorely in need of guidance.

The PTO has issued many "test-and-correlate" claims that, upon cursory examination, appear to violate the mental steps doctrine because they recite inventive mental processes and prior-art, extra-mental processes. *See, e.g.*, U.S. Pat. No. 7,504,214 (March 17, 2009) (claim 1: method of determining likelihood of cancer recurrence); U.S. Pat. No. 7,504,211 (March 17, 2009) (claim 1: method of determining the degree of resistance of a cell to a drug); U.S. Pat. No. 7,501,248 (March 10, 2009) (claim 1: method of determining treatment efficacy). The Federal Circuit is currently considering *en banc* the status of a test-and-correlate claim under section 101. *Prometheus Labs., Inc. v. Mayo Collaborative*

Servs., 2008 WL 878910 (S.D. Cal. Mar. 28, 2008). For other examples of litigated test-and-correlate claims, see *Classen Immunotherapies, Inc. v. Biogen IDEC*, 2008 WL 5273107 (Fed. Cir. Dec. 19, 2008); *King Pharms.*, 593 F.Supp.2d at 512-14; Complaint at 15, *Ass'n for Molecular Pathology v. United States Patent & Trademark Office*, No.1:09-cv-04515-RWS (S.D.N.Y. filed May 12, 2009) (challenging the validity of test-and-correlate claims involving breast cancer genes). This Court granted certiorari in order to determine the status of a test-and-correlate claim under section 101 in *Laboratory Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124 (2006), but it dismissed the writ as improvidently granted after oral argument.

Although most issued test-and-correlate claims are in the medical and biotechnological arts, test-and-correlate claims can be drafted in all arts. Kevin Emerson Collins, *Propertizing Thought*, 60 S.M.U. L. Rev. 317, 342-44 (2007) (illustrating how test-and-correlate claims function as a template for inventions in all arts). If the patent bar receives a clear signal that test-and-correlate claims are eligible for patent protection, the flood gates will open. Patent prosecutors in all arts will use them to increase the density of patent protection available per dollar spent on research.

The printed matter doctrine, too, needs to be reaffirmed. It has survived only through the stop-gap measures, and its long-term viability is widely perceived to be in jeopardy. *See, e.g.*, Andrew F. Knight, *A Potentially New IP: Storyline Patents*, 86 J. Pat. &

Trademark Off. Soc'y 859, 863-64 (2004) (arguing that storyline patents are eligible for patent protection because the printed matter doctrine "rests on shaky legal authority and, in any event, has been whittled away to an archaic common law has-been").

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CONCLUSION

This Court should not allow the fact that an expansive patent regime can generate property in the human mind to get lost in the business-method shuffle. This Court should seize this opportunity to shore up the foundations of section 101 and adopt a back-to-basics approach to patent eligibility. It should announce a bar on the patenting of any claim in which the advance resides solely in a mental process, revive the mental steps and printed matter doctrines, and safeguard the public's privilege to use the disclosure as knowledge under the *quid pro quo* of patent law.

Dated: August 6, 2009 Respectfully submitted,

KEVIN EMERSON COLLINS
INDIANA UNIVERSITY
MAURER SCHOOL OF LAW –
BLOOMINGTON
211 S. Indiana Avenue
Bloomington, IN 47405
(812) 856-1841

AMICUS
CURIAE
BRIEF

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In The
Supreme Court of the United States

◆

BERNARD L. BILSKI and RAND A. WARSAW,

Petitioners,

v.

DAVID J. KAPPOS, Under Secretary of Commerce
for Intellectual Property and Director,
Patent and Trademark Office,

Respondent.

◆

**On Writ Of Certiorari To The
United States Court Of Appeals
For The Federal Circuit**

◆

BRIEF FOR *AMICUS CURIAE* COMPUTER & COMMUNICATIONS INDUSTRY ASSOCIATION IN SUPPORT OF RESPONDENT

◆

BRIAN KAHIN
DANIEL L. JOHNSON
COMPUTER & COMMUNICATIONS
INDUSTRY ASSOCIATION
900 17th Street, N.W.,
Suite 1100
Washington, DC 20006
(202) 783-0070

GLENN B. MANISHIN*
Counsel of Record
DARLENE D. MOREAU
DUANE MORRIS LLP
505 9th Street, N.W.,
Suite 1000
Washington, DC 20004
(202) 776-7800
gbmanishin@duanemorris.com

Counsel for Amicus Curiae

October 2, 2009

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BRIEF FOR *AMICUS CURIAE* COMPUTER & COMMUNICATIONS INDUSTRY ASSOCIATION IN SUPPORT OF RESPONDENT

INTEREST OF AMICUS CURIAE

The Computer & Communications Industry Association (CCIA) is a non-profit trade association dedicated to "open markets, open systems and open networks." CCIA members participate in many sectors of the computer, information technology and telecommunications industries and range in size from small entrepreneurial firms to the largest in the industry. CCIA's members use the patent system regularly and depend upon it to fulfill its constitutional purpose of promoting innovation.

CCIA is increasingly concerned that the patent system has expanded without adequate accountability and oversight. While CCIA has no direct financial interest in the outcome of this litigation, reversing the Federal Circuit's interpretation of the scope of patentable subject matter and allowing petitioners' abstract claims to stand would subject CCIA members to increased patent litigation, burden information technology and software, and undermine the legitimacy of the patent system as a whole.[1]

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[1] Pursuant to this Court's Rule 37.6, amicus affirms that no counsel for a party authored this brief, in whole or in part, and that no person other than amicus and its counsel made a monetary contribution to its preparation or submission. The parties' letters consenting to the filing of this brief have been filed with the Clerk's office.

SUMMARY OF ARGUMENT

The decision under review is an important step in the right direction. Nonetheless, it leaves standing the *State Street* opinion and much of the damage caused by the Federal Circuit's radical expansion of the scope of patentable subject matter. *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.,* 149 F.3d 1368 (Fed. Cir. 1998), *cert. denied*, 525 U.S. 1093 (1999). A virtually unlimited range of activities were swept into the patent system without consent or participation from those affected. Uninhibited inflation of a system that purports to treat all subject matter the same has led to internal tensions, political impasse and practical failure of the disclosure function.

State Street abolished established limits on patentability by purporting to discover congressional intent to expand patentable subject matter in §101 of the Patent Act of 1952. Yet, there is no evidence of any congressional purpose to do so, nor that Congress in 1999 actually intended to ratify the Federal Circuit's approach when it established "first inventor" rights for methods of "doing or conducting business." The limits of patentable subject matter should be drawn clearly for the benefit of all – not "flexibly" for the sake of applicants.

The Court should affirm the "machine-or-transformation" test adopted below in order to provide concrete and judicially manageable limitations on patent-related obligations and liabilities. Since patent infringement imposes strict liability regardless of the technological environment, it is important to limit the likelihood of inadvertent infringement. Physical subject matter naturally constrains the scope of liability risk, while patents on virtual and abstract subject matters extend potential liabilities and costs in multiple and untoward directions.

While the Court's earlier precedents reserve the option to endorse patent eligibility that is not tied to a physical invention or process, there is no reason to do so. *Gottschalk v. Benson*, 409 U.S. 63 (1972); *Parker v. Flook*, 437 U.S. 584 (1978); *Diamond v. Diehr*, 450 U.S. 175 (1981). Internet-based business models enjoy first-mover advantages that do not, as an economic matter, need bolstering from patent exclusivity. Experience with new models of software development shows that patents are largely unneeded and, instead, pose a threat to lost-cost, Web-enabled models of innovation. Increased economic understanding of the use and effects of patents also cautions against abandoning the physical transformation standard.

Given the acknowledged difficulties of developing comprehensive legislative policy in the patent environment, and in light of the especially limited utility of suspect legislative history which would purport to achieve results that statutory language cannot support, this Court should overrule *State Street*, reaffirm the conservative approach of *Benson, Flook* and *Diehr*, and allow Congress the opportunity to work from a clean slate. Rejecting the false argument that Congress "endorsed" or codified *State Street's* construction of §101 is the appropriate result in this case because it correctly puts back into the hands of Congress the basic decision on whether to validate abstract business methods as necessary subjects of patentability.

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ARGUMENT

I. THE DECISION BELOW REPRESENTS A MAJOR STEP IN CORRECTING STRUCTURAL AND DOCTRINAL PROBLEMS ARISING FROM THE COURT OF APPEALS' EARLIER "BUSINESS METHOD" DECISIONS

Amicus believes the physical transformation test (the applicable portion of the *en banc* majority's machine-or-transformation test) espoused by the court of appeals is a step in the right direction and clearly in line with this Court's precedent. However, CCIA shares dissenting Circuit Judge Mayer's view that the "patent system has run amok," *In re Bilski,* 545 F.3d 943, 1010 (Fed. Cir. 2008), and that *State Street* should be overruled.

A. *State Street* Sets the Legal and Policy Context For *Bilski*

The Federal Circuit's landmark 1998 opinion in *State Street* made a public spectacle of the patent system by encouraging non-technical patents on "inventions" that both practitioners and the lay public ridiculed, such as toilet reservation systems and dating methods. *State Street*, 149 F.3d 1368. In the wake of *State Street*, the director of the Patent & Trademark Office (PTO) even supported patenting of legal arguments.[2] Most notoriously, *State Street* has enabled dozens of patents on tax avoidance strategies, creating monopolies on tax advice without legislative process or input from the accounting profession – and heedless of the public policies of the tax system.

Furthermore, *State Street*'s approval of business method patentability elicited large volumes of patents with poorly defined boundaries, of dubious quality, and subject to a uniquely high rate of litigation. In concert with other decisions of the Federal Circuit, *State Street* fueled demand for patents with little appreciation of long-term effects and imposed high costs and risks on business activity far from the areas best suited for patent protection. It forced the patent system – together with its attendant restraints on market competition – on professions, contrary to longstanding expectations and without the consent or participation of those affected.

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[2] Steven Pizzo, *Who's Really Being Protected?*, O'Reilly Network, May 24, 2000, http://www.oreillynet.com/pub/a/policy/2000/05/24/PizzoFiles.html?page=3.

Although there had never before been an articulated legislative or industry demand for patents on business methods, *State Street* created an intensely interested constituency opposed to virtually all limitations on patent-eligible subject matter. It was supported by an examining agency whose mission at the time was, rather perversely, to "help customers get patents."[3] As one treatise dryly observes, "broad notions of patent eligibility appear to be in the best interest of the patent bar, the PTO and the Federal Circuit. Workloads increase and regulatory authority expands when new industries become subject to the appropriations authorized by the patent law."[4]

Following *State Street*, the Federal Circuit further explained in *AT&T v. Excel*, 172 F.3d 1352 (Fed. Cir. 1999), that "this court (and its predecessor) has struggled to make our understanding of the scope of Sec. 101 responsive to the needs of the modern world." *Id.* at 1356. Many of the briefs in this case reflect the simple syllogism that intangibles are important in the modern world, that patents are the only way to protect information, and therefore intangibles should be patentable. There is unfortunately little inquiry into how or why intangible subject matter is different. Furthermore, as discussed in Section V, this approach of making statutes "responsive" to perceived present-day demands raises a substantial question of institutional competence and separation-of-powers role for the judiciary.

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[3] U.S. Patent and Trademark Office, *Corporate Plan*, at 23 (2000), http://www.uspto.gov/web/offices/com/corpplan/pt04.pdf.

[4] Roger E. Schechter & John R. Thomas, INTELLECTUAL PROPERTY: THE LAW OF COPYRIGHTS, PATENTS AND TRADEMARKS 314 (2003).

The high-water mark of this ideology occurred at the World Intellectual Property Organization (WIPO) in May 2002. Flanked by patent organizations, the U.S. delegation to WIPO asserted (without evidence) that business method patents had proved a success in the United States and proposed that patents be extended to "all activities," not just technology. Although the delegation threatened to walk out of the negotiations on substantive harmonization if other member nations did not agree, no other delegation acceded.[5]

State Street's requirement of "a useful, concrete, and tangible result" offered a blank slate onto which virtually anything could be read. It was undefined language plucked from the Federal Circuit's earlier decision in *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994), but never applied by this Court. Although "concrete" and "tangible" were obviously ambiguous, the test was never used by the Federal Circuit to reject patentability, perhaps in part because appellate attorneys are naturally loathe to offend the court of appeals with near-final power to determine their clients' fate. Hence *LabCorp* came to this Court with a limited record on issues with far-reaching ramifications, resulting in dismissal of the writ – and thus a missed opportunity for clarification or revision of the court of appeals' expansive, self-aggrandizing approach.[6]

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[5] This episode is graphically recorded in the minutes of the meeting. World Intell. Prop. Org., *Report of the Seventh Session of the Standing Committee on the Law of Patents* (2002), at http://www.wipo.int/edocs/mdocs/scp/en/scp_7/scp_7_8.pdf.

B. The Expansion of Patentable Subject Matter Has Created Unprecedented Tensions Within the Patent System

By sweeping so much into the patent system, the Federal Circuit has created major tensions within a statutory framework that is designed to treat all technologies and industries the same. These tensions arise, in part, because Federal Circuit rulings in other areas such as obviousness and injunctive relief favored traditional industries and the interests of patent holders. As this Court is well aware, the amicus briefs in *KSR* and *eBay* reflected deep divisions in how the issues were perceived, upstream and downstream and across industries.[7]

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[6] *LabCorp v. Metabolite*, 548 U.S. 124 (2006) (Breyer, J., dissenting).

[7] *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007); *eBay, Inc. v. MercExchange*, 547 U.S. 388 (2006).

The scope of inter-industry differences was illustrated in hearings on patents, innovation and competition held by the Department of Justice and the Federal Trade Commission (FTC) in 2002. They are documented in a resulting FTC report[8] for four economic sectors – pharmaceuticals, biotechnology, computers and semiconductors, and software and Internet services – with predominately negative views on the viability of patents in the Internet and software industries. Industry differences have as a consequence plagued legislative efforts at patent reform, especially concerning reasonable royalties for complex products and systems.

Economists have long been aware of differences in how industries value and use patents, primarily through a series of large-scale surveys of R&D managers, mostly recently by Carnegie-Mellon in 1994. These surveys show that patents generally rank low among means of appropriating returns from innovation in most sectors, although they are the most valued means in pharmaceuticals. The report on the Carnegie-Mellon survey comments on the "strengthening" of patent protection:

> Curiously enough, these policy changes have been made despite a forty year legacy of

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[8] Federal Trade Commission, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY (Oct. 2003), http://www.ftc.gov/os/2003/10/innovationrpt.pdf.

> empirical findings in economics that call into question whether patent protection – no less stronger patent protection – advances innovation in a substantial way in most industries. The work of Scherer et al. [1959], Mansfield [1986], Mansfield et al. [1981], and Levin et al. [1987] suggest that patent protection is important in only a few industries, most notably pharmaceuticals. Mansfield's [1986] survey research study sharpened the issue by finding that the absence of patent protection would have little or no impact on the innovative efforts of a majority of the firms in most industries. Again, pharmaceuticals was a clear exception.[9]

This somewhat surprising gap between policy assumptions and empirical evidence can be explained in several ways. Under public choice principles, pharmaceuticals can be expected to have a disproportionate influence on patent policy and a disproportionate stake in the evolution of patent law. Furthermore, the questions in the economic surveys were directed at R&D managers rather than patent departments; patent lawyers might reasonably be expected to have a stronger view of the importance of patents. In addition, because of its highly technical nature, patent law and policy is ordinarily made by specialist attorneys, who share the same heightened economic motivations as pharmaceutical firms, regardless of the company or industry in which they find themselves.

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[9] W. Cohen, R.R. Nelson and J. Walsh, *Protecting their intellectual assets: Appropriability conditions and why U.S. manufacturing firms patent (or not)* (Nat'l Bureau of Econ. Research Working Paper No. 7552, at 2 (2000).

C. In a Unitary Patent System, Subject Matter Eligibility Is a Critical Threshold Issue

In the ongoing congressional debate over legislative patent reform, as well as before this Court in *eBay*, much has been made of the difference between discrete products such as pharmaceuticals, where a product may correspond to a single patent, and complex products such as computers and software, where a product may contain thousands of patentable functions or components. There are many consequences. Patents are far more numerous in complex technologies, but they are individually less valuable because value is keyed to product markets.[10] Large companies assemble large patent portfolios, but they cross-license extensively so that each can enjoy freedom to operate.[11] The sheer scope of patentable functionality combined with the huge volume of patenting creates a high likelihood of inadvertent infringement. Yet at the same time, it makes patent "clearance" searches impractically costly.

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[10] Don E. Kash & William Kingston, *Patents In a World of Complex Technologies*, 28 Science and Pub. Policy 1, 11-22 (2001).

[11] B.H. Hall & R.H. Ziedonis, THE PATENT PARADOX REVISITED: AN EMPIRICAL STUDY OF PATENTING IN THE US SEMICONDUCTOR INDUSTRY, 1979-95, 32 RAND J. of Econ. 1, 102-128 (2001).

As Professor Lemley has observed,[12] the unfortunate answer to this quandary is *ignoring* patents:

> [B]oth researchers and companies in component industries simply ignore patents. Virtually everyone does it. They do it at all stages of endeavor. From the perspective of an outsider to the patent system, this is a remarkable fact. And yet it may be what prevents the patent system from crushing innovation in component industries like IT.

Inevitably, many patents are acquired by speculators and licensing specialists, who produce nothing, need no cross-licenses and so are uniquely positioned to "hold up" deep-pocketed producers. Most importantly, ignoring patents means that the disclosure function of the patent system has failed.

Shoehorning radically different technologies into the same patent system and subjecting them to the same standards results in two distinct equilibria: one centered on pharmaceuticals, where the content of patents is known and the system fulfills its traditional function, and another where disclosure remains mandated by law but is meaningless in practice. The system, while "unitary" in principle, is in fact broken – both because it is functioning as two different systems and because it fails of an essential purpose for complex technologies. In economic effect, it is a (perhaps unintended) industrial policy that ultimately shifts investment capital and innovation activity from sectors where patents work poorly to where they work well.

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[12] Mark Lemley, *Ignoring Patents*, 2008 Mich. St. L. Rev. 19 (2008), quote from abstract at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=999961.

Complexity is not the primary issue in this case, but the growing problem of market effect (a major focus in a new round of FTC hearings[13]) illustrates the importance of subject matter eligibility as a threshold issue. Once a particular market is within the patent system, it is subject to the same rules as pharmaceuticals. Scholars argue that policy levers, old and new, can be used to adjust the patent system to different technologies.[14] They show that the Federal Circuit already uses some levers, including obviousness, although they also maintain that the court of appeals has applied them wrongly.

Yet at present this kind of standards-based differentiation is not consistent with traditional interpretation of the statute or with judicially articulated patent principles. Nor is there an institutional mechanism for calibrating the use of policy levers and determining whether they are being used correctly. (That would require collecting data on use of patents and economic analysis of the data.) Finally, explicit disparate treatment appears facially contrary to international obligations – *i.e.,* Article 27.1 of TRIPS – which preclude discrimination among technologies and demand that one size fits all.[15]

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[13] Federal Trade Commission, *The Evolving IP Marketplace* (2009), http://www.ftc.gov/bc/workshops/ipmarketplace/.

[14] Dan L. Burk and Mark A. Lemley, THE PATENT CRISIS AND HOW THE COURTS CAN SOLVE IT (2009).

II. THERE IS NO EVIDENCE THAT CONGRESS INTENDED TO EXTEND PATENT ELIGIBILITY TO BUSINESS METHODS

Contrary to Petitioners' arguments,[16] there is no evidence that Congress intended to depart from precedent concerning business methods or the meaning of "process" when it enacted the Patent Act of 1952.

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[15] The treaty requires that patents must be "enjoyable without discrimination as to the place of invention, the field of technology and whether products are imported or locally produced." *Trade-Related Aspects of Intellectual Property Rights* (TRIPS), Annex 1C to Marrakesh Declaration of 15 April 1994 establishing World Trade Organization, at http://www.wto.org/english/docs_e/legal_e/27-trips_04c_e.htm. The non-discrimination provision with respect to technology was inserted at the behest of the pharmaceutical industry.

[16] *E.g.*, Pet. Br. at 37-38 (Federal Circuit has "retreated from its former technology-neutral position" that §101 was intended not to "place any restrictions . . . on subject matter") (citations omitted).

State Street reads the term "any" in §101 of the Act as overturning historic practice and a longstanding judicial rule despite the fact that the "any" language first appeared in the statute in 1793. *State Street,* 149 F.3d at 1373. The opinion attempts to shore up this claim by citing the infamous mantra, "anything under the sun made by man." *Id.*

Judge Mayer cogently addresses the problems with this argument in his dissent below in criticism of *State Street*. 545 F. 3d at 1000. The phrase is a mere appositive in a sentence that reads in full: "A person may have 'invented' a machine or a manufacture, which may include anything under the sun that is made by man, but it is not necessarily patentable under Section 101 unless the conditions of the title are fulfilled." Read in context, the passage is plainly not directed at the scope of patentable subject matter, but rather to ensuring that all provisions of Title 35 are complied with. It lay unnoticed for 27 years until Judge Rich, the author of *State Street* and also one of the two principal drafters of the 1952 Act, quoted the phrase in *In re Bergy*, 596 F.2d 952, 987 (C.C.P.A. 1979).[17] This Court affirmed the *Bergy* decision, with Chief Justice Burger repeating the "anything under the sun" *dictum* without the rest of the sentence. *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980).[18] The phrase would reappear, again out of context and as *dicta* in *Diehr*, even though *Diehr* did not involve machines or "manufacture," as the sentence specifies, but a conventional physical process that did not present patentability questions. *Diehr,* 450 U.S. at 182.

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[17] Judge Rich credits the statute's legislative history to his drafting partner P. J. Federico, a patent attorney employed by the Patent Office on loan to the House committee. Giles S. Rich, *Congressional Intent – Or, Who Wrote the Patent Act of 1952?*, reprinted in PATENT PROCUREMENT AND EXPLOITATION 61, 73 (BNA 1963).

In fact, *Diehr* holds that Congress did not alter the meaning of "process" in the 1952 Patent Act. "Analysis of the eligibility of a claim of patent protection for a 'process' did not change with the addition of that term to §101." *Id.* at 184. The Act was enacted as part of an immense project to recodify U.S. statutes and against a backdrop of established judicial limitations on patentability. If Congress intended to change the business method exclusion in this regard, it was quite capable of doing so explicitly.[19]

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[18] A. Samuel Oddi, *Assault on the Citadel: Judge Rich and Computer-Related Inventions*, 39 Houston L. Rev. 1033, 1074-76 (2002) (recounting history of the phrase).

[19] *Chakrabarty* involved an unforeseen technology rooted in the natural sciences that was neither intangible nor abstract. 447 U.S. 303. In contrast, methods of doing business are neither new nor unanticipated. Business methods had been practiced, unprotected by patents, for hundreds of years when Congress enacted the 1952 Act. As many have argued, they are not technology and so are not within the "useful arts" under *In re Musgrave*, 431 F.2d 882, 893 (C.C.P.A. 1970).

Petitioners seek to invest §101 with a congressional purpose based on language that does not appear either there or, as addressed in the next section of this brief, in other language added to a different section of the Act in 1999. Legislative history of congressional intent of course cannot be used to interpret §101 unless that intent is "clearly expressed." *Reves v. Ernst & Young,* 507 U.S. 170, 177 (1993). When applying legislative history, this Court is rightly skeptical of arguments that would alter the plain meaning of statutory text or elevate views of individual legislators to interpretative prominence.

The limitations of legislative intent are especially evident in this matter. Drawing on his drafting experience, Judge Rich commented not long afterwards that "[m]embers of the Congress wrote only a few words of the Patent Act . . . [which] was written basically . . . by patent lawyers drawn from the Patent Office, from industry, from private practice, and from some government departments." *Rich, supra* n. 17, at 73.[20]

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[20] Judge Rich quotes Rep. Crumpacker's assessment that a "good 95% of the members of both bodies [of Congress] never knew that the legislation was under consideration, or that it had passed, let alone what it contained. . . . How can the House, as a legislative body, be said to have any 'intent' with respect to the bill?" He adds:

> The foregoing will, it is hoped, cause you to pause and think when you hear or use the phrase "intent of Congress." Realistically, the "intent," with respect to the Patent Act of 1952, was the intent of a subcommittee to

(Continued on following page)

Although Judge Rich's article discusses some of the changes wrought by the Act, he mentions nothing concerning the definition or scope of "process."[21] Even in *Alappat*, from which *State Street* extracted the "useful, concrete, and tangible result" standard, Judge Rich observed:

> We further note that *Maucorps* dealt with a business methodology for deciding how salesmen should best handle respective customers and *Meyer* involved a "system" for aiding a neurologist in diagnosing patients. Clearly, neither of the alleged "inventions" in those cases falls within any Section 101 category.

In re Alappat, 33 F.3d 1526, 1541 (Fed. Cir. 1994).

> pass the bill prepared by the patent lawyers. . . . You need only compare the bill prepared by the Coordinating Committee with the law as enacted to see this.

See Rich, *supra* n. 17, at 75, 77.

[21] Giles S. Rich, *Principles of Patentability*, 28 Geo. Wash. L. Rev. 393 (1960), *reprinted in* John Witherspoon, ed., NONOBVIOUSNESS: THE ULTIMATE CONDITION OF PATENTABILITY, at 2:8 (1980).

A. *State Street*'s Elimination of the Exclusion of Patents on Business Methods Was Not Endorsed by Congress in the American Inventors Protection Act of 1999

Petitioners similarly seek to invest §273, enacted by the American Inventors Protection Act of 1999 (AIPA),[22] with a congressional intent that simply cannot be found. Pet. Br. at 30-34. Because Congress did not add business methods to the scope of patentable subject matter, its creation in 1999 of a first-user right "defense" is alone not compelling evidence that the Legislative Branch intended anything more than to avoid a politically untenable comprehensive rewrite and to limit the practical damage resulting from the Federal Circuit's unanticipated expansion of patentability in *State Street*.

The limited utility of legislative history, of concern generally in the complex realm of intellectual property, is particularly significant here. First, nothing in the AIPA, including §273, expressly includes business methods (whether or not tied to a machine-or-transformation) within the scope of §101. Second, there is no legislative history whatsoever indicating that by adding a prior-user defense in §273, Congress codified, endorsed or even agreed with the

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[22] American Inventors Protection Act of 1999, Pub. L. No. 106-113, 106th Cong. (codified as amended in scattered sections of 35 U.S.C.).

Federal Circuit's *State Street* doctrine. Finally, Congress has very limited attention available, especially for a technical area of the law – as Judge Rich's insider account of the 1952 Act makes clear – and committee staff often rely on outside experts for report language, as appears to have been the case with both the 1952 Act and the AIPA.

The AIPA was the outcome of a long push for legislation directed at international harmonization that began with the 1992 Report of the Advisory Commission on Patent Reform.[23] The Commission advocated prior user rights similar to those available in a number of European countries. But prior user rights were vehemently opposed by small inventors and universities, who saw them as undermining the value of their patents. The legislative package as a whole, which included moving the patent system from first-to-invent to first-to-file, had generated emotional debate and opposition.

As Petitioners note (Pet. Br. at 31), Congress was unwilling to take a close look at the scope of patentable subject matter. This was not because Congress agreed with the *State Street* decision, but rather because initiating a debate over patentable subject matter on top of prior user rights, first-to-file and other contentious issues would likely have killed political prospects for the package. Yet *State Street*, by upsetting settled expectations, provided a useful argument for rescuing a framework for prior user rights, restyled as the "first inventor defense." As explained by Representative Manzullo:

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[23] Advisory Commission on Patent Law Reform, *A Report to the Secretary of Commerce* (August 1992). Edward MacCordy, Association of University Technology Managers, refused to sign the report because of his objections to the recommendations on prior user rights.

> Before the *State Street Bank and Trust* case . . . it was universally thought that methods of doing or conducting business were not patentable items. . . . In recognition of this *pioneer clarification* of the law, we felt that those who kept their business practices secret had an equitable cause not to be stopped by someone who subsequently reinvented the method of doing or conducting . . . business and obtained a patent. We, therefore, limited the first inventor defense solely to that class of rights.

145 Cong. Rec. H6,947 (Aug. 3, 1999) (emphasis supplied). In other words, §273 was essentially damage control.

Inclusion of business methods in what became §273 was not presented, even indirectly, as an endorsement of business method patents. Rather it was a last minute effort to rescue prior user rights by defining "methods" as limited to "methods of doing business." Once this statutory language was added, there were post-hoc attempts to insert snippets of what might charitably be characterized as contrived legislative history on the floor to support a broader view than the traditional understanding of business methods as outside of the technological arts. These included:

- "[A] method for conducting business such as a preliminary or intermediate manufacturing procedure." 145 Cong. Rec. E1,789 (Aug. 3, 1999) (statement of Subcommittee Chair Coble);
- "It includes a practice, process, activity, or system that is used in the design, formulation, testing, or manufacture of any product or service." 145 Cong. Rec. S14,836 (Nov. 18, 1999) (statement of Sen. Schumer).

There is nothing in the legislative record to show that Congress actually addressed or decided on either the definition of "business methods" or the proper scope of patentable subject matter while enacting the AIPA and §273. Indeed, the reality is that Congress was weary of patent reform after years of increasingly polarized debate about harmonization (including prior user rights) and was in no mood to wade into subject matter issues, especially in the face of opposition from the patent bar. The legislation was watered down and slipped into a consolidated appropriations bill to enable passage (Pub. L. No. 106-113).[24] Shortly thereafter, efforts to address business method patents directly met with a unanimous statement by the influential Intellectual Property

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[24] Text available at http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=106_cong_public_laws&docid=f:publ113.106.

Owners Association advising against legislative action.[25]

In sum, both *State Street* and the proposition that Congress "endorsed" the Federal Circuit's construction of §101 in the AIPA should be rejected. The decision on whether to validate business method patents should be returned to Congress free of the entrenched legal and political interest groups created in the wake of the Federal Circuit's doctrinal expansion. If business method patentability is to be included within the Patent Act, it should properly emanate from the body assigned by the Constitution to establish and implement public policy, a task the judiciary is neither institutionally nor politically fit to undertake.

III. THE LIMITS OF PATENTABILITY SHOULD BE DRAWN FOR THE BENEFIT OF ALL, NOT PATENT SPECIALISTS AND OTHERS WITH VESTED INTERESTS IN EXPANDING THE SCOPE OF THE PATENT SYSTEM

In the absence of a compelling case that Congress intended to abolish it, re-establishing the exclusion of business methods from patent-eligible subject matter would easily resolve this case. *State Street*'s rejection of the exclusion as "ill-conceived," with little or no explanation of underlying principles, cannot be justified. *State Street*, 149 F.3d at 1375. The fact that the business method exclusion generated little litigation or controversy, while in place for more than 100 years, speaks in its favor – not as an excuse to jettison it. Unfortunately, *State Street* saw the line-drawing problem only from the inside, that is from the perspective of the patent applicant, and oblivious to the legitimate expectations of those on the outside.

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[25] Intellectual Property Owners Association Board of Directors, June 28, 2000 and reaffirmed on February 26, 2001, http://www.ipo.org/AM/TemplateRedirect.cfm?template=/CM/ContentDisplay.cfm&ContentID=2610.

Some *amici* argue for flexibility, citing this Court's rejection of the "teaching-suggestion-motivation" (TSM) test as a determinative rule for obviousness. *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007). However, there are critical differences. The TSM standard was a major departure from precedent in favor of the patentee. More fundamentally, the obviousness inquiry, the question in *KSR*, is internal to the patent system. In this case, the Court is reviewing external limits to the system. Subject matter eligibility is the "first door" through which the applicant must pass. *Bergy*, 596 F.2d at 960. Only then should the process proceed to the internal criteria in §§102 and 103. In other words, the subject matter boundary is primary. For reasons of equity and efficiency, those on the outside should have clear notice of what might be patentable so they are not obliged to expend resources avoiding patents with no benefit.

It might be desirable to design limits that are flexible in favor of outsiders by offering multiple exclusions, such as the historic exclusions for methods of doing business, functions of a machine, mental processes, printed matter and algorithms. Collectively, these provided not a single bright line, but at least a collection of relatively explicit signals as to the outer bounds of the patent system. Unfortunately, the exclusions that once provided guidance as to what remained outside the patent box have largely been eliminated or eviscerated by the Federal Circuit and its predecessor.

There is now growing concern with notice failure in the patent system, a problem studied by James Bessen and Michael Meurer in PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK (2008). They explain that "fuzzy boundaries" undermine the effectiveness of patents as property rights by increasing costs and risks for both patentees and alleged infringers. *Id.* at ch. 3. Fuzziness has a number of causes, including ambiguous terms, uncertainty in claims interpretation, prohibitive costs of clearance searches and unpredictable damages, and it is found at all levels from individual patents to portfolios to system-wide rules and standards. *Id.* Ironically, the Federal Circuit was intended to reduce system-level "fuzziness" by creating uniform law; Bessen and Meurer argue that patents have imposed substantial costs on the private sector in part by allowing abstract subject matter that has inherently fuzzy boundaries. *See id.* at ch. 6.

When the limits are clear, patent-intensive firms are best positioned to cross lines and move in. Thus, it has been shown that most financial patents are owned by outsiders, especially firms in information and communications technology, despite the wake-up call that *State Street* provided.[26] Similar patterns have been noticed in software.[27] The result is not only a blurring of industry lines and rebalancing of strategic interests but, as congressional inaction following *State Street* showed, constituencies intensely interested in the newly realized *status quo* who will resist any legislative intervention.

Clear notice of the outer perimeters informs professions, businesses and entire industries where obligations to search for patents, as well as opportunities to secure patents, begin. The machine-or-transformation test as articulated by the Federal Circuit below provides a relatively clear criterion, although it will plainly benefit from further elucidation. The public policy imperative of recognizing the costs and burdens of an expansive patent system, *see Verizon Communications, Inc. v. Law Offices of Curtis J. Trinko*, 540 U.S. 398 (2004) (emphasizing innovation and efficiency costs of antitrust litigation), argues for drawing the line conservatively and, therefore, deferring to the more participatory legislative process, with its corresponding public notice and input, before judicially expanding the regulatory scope of the patent system.

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[26] Robert M. Hunt, *Business Method Patents and U.S. Financial Services*, at 4 (Federal Reserve Bank of Philadelphia, Working Paper No. 08-10/R (May 2008)).

[27] James Bessen and Robert M. Hunt, *An Empirical Look at Software Patents*, at 15 (Federal Reserve Bank of Philadelphia, Working Paper No. 03-17/R (March 2004)).

IV. THE COURT SHOULD REEVALUATE THE OUTER BOUNDARY OF THE PATENT SYSTEM IN TERMS OF PRECEDENT AND UNDERLYING PRINCIPLES

Today the Court faces questions it last addressed nearly 30 years ago under very different circumstances. The insights of the trilogy of *Benson*, *Flook* and *Diehr,* including the Report of the President's Commission on the Patent System (quoted at length in *Benson*), remain valid today. The Court's teachings can now be recast and refined in the light of experience with the digital environment.

A. The Boundaries of the Patent System Should Serve to Contain Liability

Patents, by virtue of their strength, are capable of imposing enormous costs and risks on others. Potential targets include a range of inadvertent infringers, from independent innovators to unwitting resellers and innocent users. Recent research indicates that fewer than 3% of cases involving infringement of software allege copying, despite the added damages that result from willful infringement.[28] This suggests that at least 97% of litigated infringements are unintended. Yet, unlike copyright, patent law makes no exception for independent invention.

As long as the patent system imposes strict liability on all activities within its scope, it should ensure that liability does not extend to what is practically unknowable. The disclosure function must work as envisioned; innovators need to find it useful to learn and evaluate patents in their area, rather than ignoring them. Ignoring patents may make sense as a business practice today, or as a design-around for a dysfunctional patent system. However, it creates enormous risks and potential liability that cannot be readily evaluated and reported, and that are likely to grow in time as secondary markets for patents continue to expand. This divergence between operation of law and practice is troublesome and naturally erodes respect for intellectual property.

Tying patentability to physical subject matter is not a perfect solution. However, it limits the reach of patents in important ways that can significantly reduce the risks of inadvertent infringement and the scope of potential liability. The number of competitors, and thus potential blocking patents, will be manageable because of the necessary capital investment in materials and R&D. Innovators are likely to be aware of each others' products and intellectual property. Similarly, the scale of distribution (and hence downstream liability) is likely to be manageable because at some point there will be costs of moving physical subject matter.

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[28] M.A. Lemley and C.A. Cotropia, *Copying in Patent Law*, Feb. 18, 2009, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1270160.

Although the breakdown of the disclosure function is not limited to software and business method patents, their abstract (and complex) nature exacerbates the notice and search problems in several ways. The terminology used to describe such patents is often ambiguous and changes over time.[29] This makes the claims difficult to read and especially difficult to know when old patents apply to new technologies. For example, the claim of British Telecommunications, PLC (BT) to have invented hyperlinks was asserted in 2000, seven years after the World Wide Web went public and linking had spread rapidly as a nonproprietary standard.[30] But the patent (filed in 1976 and granted in 1989) was based on a very different early videotext environment. Had BT succeeded, it could have held the entire Internet hostage on the basis of patents that contributed nothing to the development of the Web and which BT had apparently forgotten that it owned.

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[29] PATENT FAILURE, *supra*, at 201-04, 210-12.

[30] *British Telecommunications, PLC v. Prodigy Communications Corp.*, 217 F. Supp. 2d 399 (S.D.N.Y. 2002).

B. *Benson* Anticipates the Problem of Complexity and Widely Distributed Liability

Despite frequent misinterpretation, the algorithm in *Benson* was unpatentable not because it lacked practical utility, but because it was too useful in an elemental sense. "Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work." *Benson,* 409 U.S. at 67 (emphasis added). In other words, the algorithm could be used in a wide variety of applications. "The end use may . . . vary from the operation of a train to verification of drivers' licenses to researching the law books for precedents. . . ." *Id.* at 68. If patented, all these uses would be in jeopardy since the patent would not be tied to a particular physical use.

The *Benson* Court clearly understood the functional complexity of digital computers. The opinion even makes a little-noticed distinction between analog and digital computers, limiting the decision to digital. *See id.* at 71. The digital/analog distinction is a bright line which, thanks to the personal computer and the Internet, shines much brighter today than it was in 1972. Analog computers are long gone. What was once a distinction between two kinds of computers now looks like a distinction between two worlds: the virtual and the physical.

The scope of functionality required to make useful software goes far beyond the singular function of the algorithm in *Benson*. There are approximately 100,000 "function points" in Windows XP, a measure of code-level complexity more meaningful than lines of code, and that figure does not include the routines, program features and modules found at higher levels of software functionality. Without any external physical framework as in *Diehr* – or a nontechnological framework as traditionally associated with business methods – a computer program is no more than algorithms connected by other algorithms, albeit in very large numbers. We now see that functional complexity leads to liability as long as the process behind a function is patentable.

Benson quotes approvingly from the report of the President's Commission on the Patent System (1966), including the observation:

> The Patent Office now cannot examine applications for programs because of the lack of a classification technique and the requisite search files. Even if these were available, reliable searches would not be feasible or economic because of the tremendous volume of prior art being generated. Without this search, the patenting of programs would be tantamount to mere registration and the presumption of validity would be all but nonexistent.

Benson, 409 U.S. at 73. The Commission recommended against patents for computer programs on the basis that "all inventions should meet the statutory provisions for novelty, utility and unobviousness and that the above subject matter *cannot readily be examined for adherence to these criteria.*"[31]

At the time, the recommendation was criticized as expedient and serving the interests of the Patent Office over applicants. However, the problems the Patent Office faced in 1966 merely foreshadowed practical problems innovators and the private sector as a whole would later confront as patents on the information processes in computer programs were acquired and used in a growing variety of ways.[32]

True, the challenge presented by numerous, sometimes overlapping patents in complex technologies is not new. In the case of aircraft, it was severe enough to warrant government intervention.[33] Unlike sewing machines and aircraft, information technology is a general-purpose technology. It is not limited or directed to a particular physically defined function; rather it offers an enabling platform that pervades all sectors of the economy – and upon which an infinite variety of services and applications can be built. In digital technology, the problems of complexity have been muted because so many "basic tools" were in the public domain. But unless the threshold for patenting is set very high, unbounded opportunity eventually leads to unbounded liability.

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[31] The President's Commission on the Patent System, "To promote the progress of useful arts in an age of exploding technology" (1966), IV (emphasis added).

[32] A Commission member would later recall: "The commission members were greatly pleased that the Johnson administration accepted all of its recommendations. Regrettably, only a few were enacted into law due to the highly influential Patent Law Bar that opposed most of the commission's recommendations." James W. Birkenstock, *Pioneering: On the Frontier of Electronic Data Processing, a Personal Memoir*, 22 IEEE Annals of the History of Computing, 41 (2000).

[33] R. Merges and R. Nelson, *On the Complex Economics of Patent Scope*, 90 Colum. L. Rev. 839, 891 (1990).

While it may make practical business sense to ignore patents, liability knows no bounds. Conventional wisdom holds that patent owners pursue deep-pocketed operating companies, but an alternative strategy is to litigate against those who cannot afford to defend infringement claims. Even retail websites are vulnerable to attack.[34] Anyone can secure program patents, which can then be sold to specialists in assertion. In the physical realm, a modest number of patents is held by known competitors; in the virtual realm, a large number of patents are held a by large number of unidentified entities and individuals.[35]

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[34] An infringement opinion alone costs on average over $13,000. AIPLA Report of the Economic Survey 2007 at I-77. Most attacks on small entities are probably settled before a lawsuit is filed, and in most cases the parties are not newsworthy. *But see* Amy Harmon, *Technology Users: Uneasy on SBC Claim to Patent On Web Tool,* New York Times, Jan. 2003, http://www.nytimes.com/2003/01/28/business/technology-users-uneasy-on-sbc-claim-to-patent-on-web-tool.html; *Retail e-Commerce Lawsuits Are Settled, But More May Be in The Works*, Internet Retailer, May 1, 2004, http://www.internetretailer.com/internet/marketing-conference/81025-retail-e-commerce-lawsuits-are-settled-but-may-be-works.html; Michael Arrington, *Channel Intelligence Just About Everyone Who Offers Wishlists*, TechCrunch, July 2008, http://www.techcrunch.com/2008/07/17/channel-intelligence-sues-just-about-everyone-who-offers-wishlists/.

C. The Internet and Web Illuminate the Distinction Between Physical and Virtual Subject Matter

State Street blurred the distinction between business methods and computer programs by subjecting them to the same "useful, concrete, and tangible result" test – with its lack of definition and unexplained focus away from subject matter onto results. Neither pure business methods nor pure computer programs involve physical transformation, and some 80% of business method patents are also software patents.[36] Software operates at many different levels of abstraction and at higher levels may implement particular business methods (such as one-click ordering) or, at the highest level, what may be described as business models (*e.g.*, reverse Internet auctions).

But software implementation alone adds nothing to the tangibility of the business method/model. Nor does a general-purpose computer contribute particularity or any meaningful physical effect. A black box performing a software application does not make it any more tangible than executing the same program in the dematerialized "cloud" of increasingly popular cloud computing services. It makes no sense to accept the patent in the *State Street* decision merely because digital symbols are manipulated on an identified computer rather than a remote service that is not linked to any particular machine.

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[35] Ben Klemens, *The Rise Of The Information Processing Patent*, 14 B.U. J. Sci. & Tech. L. 1, 23-34 (2008).

[36] Robert M. Hunt, *supra* n. 26, at 1.

Significantly, both business methods and computer software become less physically embodied and more virtual on the Internet. In the case of business models, the Web lowers entry barriers and greatly extends the market. Resultant economies of scale and network effects provide powerful first-mover advantages that are unnecessarily amplified by adding patent protection. Without patents, there is at least an opportunity for competition on implementation before the market "tips" to a dominant firm.

The Web has radically changed the economics of creating, distributing and maintaining software. Under a variety of open source models, software can be produced in modules by globally distributed, differently motivated individuals, some paid by companies and some volunteering their own time. This is possible because servers on the Web help structure and manage collaboration and because Internet distribution of software is nearly instantaneous and practically costless. While the software may be free, market value is generated in other ways, most often through complementary products and services. Open source software is now used in virtually every major company, often alongside proprietary software.

The success of open source models suggests that patents are an unneeded incentive for software development. The high costs of the patent system pose special challenges to open source software because production is usually uncapitalized, decision-making is often decentralized, code is readily available and fully exposed to view, and widespread use creates widespread potential for liability. Major companies with open source-based businesses have addressed the threat by patenting defensively. Yet defensive patenting is not effective against nonpracticing entities, and anyone can use unfocused claims of multiple infringement to undermine user confidence in open source.[37]

In contrast, copyright imposes no burden on open source software, so long as code is not copied from proprietary applications. In fact, copyright law is used by some open source license models (with "copyleft" or "viral" clauses) to protect against proprietary capture and ensure continuity of terms and access. In general, copyright fits well with the way all software is developed. It is virtually costless, automatic and permits independent creation. It imposes no obligation to search, only an obligation not to take without permission. Whereas patents for software remain controversial in the U.S. and abroad,[38] copyright is noncontroversial and accepted by consensus.

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[37] Roger Parloff, *Microsoft Takes on the Free World,* Money, May 14, 2007, http://money.cnn.com/magazines/fortune/fortune_archive/2007/05/28/100033867/.

D. Questionable Uses of Patents and Increased Economic Understanding Argue Against Departure From Precedent

In *Benson* and *Flook*, this Court left the door open to sanctioning patentable subject matter not linked to a machine or transformation. However, breaking with precedent cannot be justified by the increased economic importance of software and Internet services. To the contrary, that very economic importance makes it critical that the line be drawn in the right place.

As noted earlier, survey evidence has revealed major differences among industries in how patents are used and valued. In the landmark Bessen and Meurer study,[39] software is by far the biggest loser, showing annual patent litigation burden an order of magnitude greater than annual patent profits.[40] The likelihood of a software patent being involved in litigation rises significantly over a 16-year period,[41] and there is a 13.7% chance that a business method patent will be involved in a lawsuit, far higher than the average of 2.0%.[42] Lerner finds that patents on financial services and products are litigated at a rate 27 times the rate of patents as a whole.[43]

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[38] From 2002 to 2005, Europe experienced pointed public debate over a proposed European Union directive on software patents. The directive, which was intended to expand patent protection for software, was finally voted down in a lopsided rejection in the European Parliament. Andres Guadamuz, *The Software Patent Debate*, J. of Intellectual Property L. & Practice 1:3, 196-206 (2006).

[39] PATENT FAILURE, *supra*, at 138-44.

[40] *Id.* at 143-44.

The sensitivity of patents (and thus their real-world utility for innovators) to changes in the law seems to be far less than is generally supposed. "Strengthening" patent law has little effect on patent applications of domestic inventors.[44] The advent of business method patents did not increase R&D intensity in financial services industries,[45] nor did it affect the number of new financial instruments.[46]

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[41] *See id.* at 93.

[42] *See id.* at 191.

[43] Josh Lerner, Trolls on State Street?, The Litigation of Financial Patents, 1976-2005, http://www.people.hbs.edu/jlerner/Trolls.pdf.

[44] Josh Lerner, *150 Years of Patent Protection*, 92 American Econ. Rev., 221-225 (2002).

[45] Robert Hunt, *Ten Years After: What Are the Effects of Business Method Patents in Financial Services?,* Federal Reserve Bank of Philadelphia Business Review, Third Quarter 2008, 21, 26, http://www.philadelphiafed.org/research-and-data/publications/business-review/2008/q3/brq308_effects-of-business-method-patents.pdf.

[46] Stefania Fusco, *Is the Use of Patents Promoting the Creation of New Types of Securities?*, 25 Santa Clara Computer & High Tech. L. J., 243 (2009), http://www.chtlj.org/authors/fusco.

Among the larger owners of software patents, increases in patent intensity are associated with a decrease in R&D intensity, suggesting that patents may actually, and ironically, substitute for R&D.[47]

Bessen and Meurer summarize as follows:

> Software patents have been controversial in part because the software-publishing industry grew up largely without patents and most computer professionals oppose patenting software. But judicial decisions during the 1990s eliminated certain obstacles to software patents, and now close to 200,000 software patents have been granted. . . . [D]espite being a relatively new area for patenting, software patents accounted for 38 percent of the total cost of patent litigation to public firms during the late 1990s. This does not appear to be a temporary problem that is dissipating as the Patent Office adapts – the probability that a software patent will be litigated has been *increasing* substantially rather than decreasing.[48]

Since most patents begin life as protection for a specific technology, the impact of secondary markets and new ways of monetizing patent value are only realized over time. Patents are commonly perceived as assets when they issue. Yet because patents are negative rights, exploitation of patents as assets ultimately means utilizing the power to impose liability and costs on others. Hence, patents logically end up in the hands of those who can extract the most value from them, frequently nonpracticing entities or other outsiders who have no need for cross-licenses and are free to assert patents against operating companies with product lines at stake.

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[47] J. Bessen and R. Hunt, *The Software Patent Experiment* (March 16, 2004), http://www.researchoninnovation.org/softpat.pdf.

[48] PATENT FAILURE, *supra*, at 23.

This arbitrage takes time because the market is so opaque, and the uptake is not without risk since legal outcomes, especially jury verdicts and damage awards, are notoriously unpredictable. Yet as Ron Epstein, CEO of Ipotential, told the FTC: "unpredictability is the only thing that's allowing these patent owners to get the access to capital which allows them to actually try and get a return on the patents."[49] The high risk inherent in this kind of lottery necessarily imposes a commensurate risk back on producing companies. This is a zero-sum game.

V. THE COURT SHOULD REAFFIRM ITS PRECEDENT ON THE LIMITS OF §101 AND RETURN THE INITIATIVE TO CONGRESS.

The development of patent law presents unique problems with which the judiciary should rightfully be concerned. Increasingly diverse economic interests contend with each other within a framework that lacks regular and reliable means for monitoring and analyzing economic activity. Technologies proliferate, along with business models built on the special economic characteristics of different technologies. Product complexity, globalization, competition and rapid change drive patent applications and grants to unprecedented heights. The system is intended to produce innovation, public knowledge and economic results; yet the market remains opaque and ignorance may be the best practice.

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[49] Federal Trade Commission, The Operation of IP Markets, May 4, 2009, http://ftc.gov/bc/workshops/ipmarketplace/.

Under these difficult circumstances, Congress has historically addressed only a small subset of potential reforms that might require amending the statute, leaving the most contentious issues to the courts. Congress has been especially reluctant to entertain subject matter issues. Prospective restrictions offer little immediate impact from the documented problems in the current system, but are nonetheless vigorously opposed by patent practitioners. Retroactive restriction is politically impossible and presents the serious risk of being deemed, legally and politically, a constitutional taking requiring compensation.[50]

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[50] The Congressional Budget Office estimated a budgetary impact of $1.4 billion for a reform bill passed by the Senate Judiciary Committee because it included a provision of interest to banks that would have eliminated damages for infringing a number of check-collecting patents. Cong. Budget Office, 110th

(Continued on following page)

By improvidently allowing "everything under the sun" into the patent system, *State Street* effectively preempted thoughtful Congressional analysis. The decision below reaches back behind *State Street* to resuscitate the traditional limits on the scope of the patent system, as reflected in *Benson*, *Flook* and *Diehr*. By doing so, it properly gives Congress a clean slate and a fair opportunity, along with a timely incentive, to independently evaluate this judicially-inspired expansion of patentable subject matter. Rejecting the false argument that Congress "endorsed" or codified *State Street*'s construction of §101 (*see* Section II), and thus overruling the Federal Circuit's untoward departure from this Court's patent jurisprudence, is the appropriate result in this case because it correctly puts in the hand of Congress the basic decision on whether to validate abstract business methods as necessary subjects of patentability.

◆

Cong., *Cost Estimate: S. 1145, Patent Reform Act of 2007*, at 6 (2008), http://www.cbo.gov/ftpdocs/89xx/doc8981/s1145.pdf.

CONCLUSION

For all the foregoing reasons, the judgment of the Federal Circuit below should be affirmed.

Respectfully submitted,

GLENN B. MANISHIN*
**Counsel of Record*
DARLENE D. MOREAU
DUANE MORRIS LLP
505 9th Street, N.W.,
Suite 1000
Washington, DC 20004
(202) 776-7800
gbmanishin@duanemorris.com

BRIAN KAHIN
DANIEL L. JOHNSON
COMPUTER & COMMUNICATIONS
INDUSTRY ASSOCIATION
900 17th Street, N.W.,
Suite 1100
Washington, DC 20006
(202) 783-0070

Counsel for Amicus Curiae

October 2, 2009

AMICUS
CURIAE
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In The
Supreme Court of the United States

◆

BERNARD L. BILSKI and RAND A. WARSAW,

Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY of COMMERCE and INTELLECTUAL PROPERTY and ACTING DIRECTOR, PATENT AND TRADEMARK OFFICE

Respondent.

◆

ON WRIT OF CERTIORARI TO
THE UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

◆

BRIEF OF *AMICUS CURIAE*
CONEJO VALLEY BAR ASSOCIATION
IN SUPPORT OF NEITHER PARTY

◆

Steven C. Sereboff
Counsel of Record
M. Kala Sarvaiya
Mark A. Goldstein
Michael D. Harris
SOCAL IP LAW GROUP LLP
310 North Westlake Boulevard, Suite 120
Westlake Village, California 91362
(805) 230-1350

Counsel for Amicus Curiae
Conejo Valley Bar Association

BOTH 4X3JHZ

Dated: August 3, 2009

THE LEX GROUP^DC ◆ 1750 K Street N.W. ◆ Suite 475 ◆ Washington, DC 20006
(202) 955-0001 ◆ (800) 815-3791 ◆ Fax: (202) 955-0022 ◆ www.thelexgroup.com

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RULE

SUP. CT. R. 37.6 1

Brief Of *Amicus Curiae*
Conejo Valley Bar Association
In Support Of Neither Party [1]

INTEREST OF THE *AMICUS CURIAE*

Based in the heart of Southern California's 101 Technology Corridor, the Conejo Valley Bar Association draws its membership from local law firms and in-house attorneys serving small, mid-market and large companies. Our members' clients are predominantly high tech, high growth companies in fields such as software, biotech, computer networking, telecommunications and semiconductors. Our members' clients are innovators who vend in some of the world's most competitive markets.

When public policies of the patent system are at issue, the Conejo Valley Bar Association regularly participates as *amicus curiae* in cases before the Court and *en banc* panels of the Court of Appeals for the Federal Circuit. We are unconcerned with the outcome of the cases, though decidedly concerned about the issues. We wish to see the American public benefit from innovation, from technical disclosure, and from competition in product and service markets. In short, we support the purpose of the patent system. The Conejo Valley Bar Association believes that the patent laws should be interpreted in ways that best serve these important public policies.

---

[1] Pursuant to Supreme Court Rule 37.6, Amicus states that no counsel for a party authorized this brief in whole or in part and that no person or entity other than Amicus, its members, and its counsel contributed monetarily to the preparation or submission of this brief. With the consent of the parties, the Conejo Valley Bar Association submits this brief amicus curiae in support of neither party. Copies of the letters of consent are filed with the Clerk of the Court herewith. Originals will be provided in due course.

INTRODUCTION AND SUMMARY OF ARGUMENT

The underlying purpose of patent law is to encourage the development of inventions that provide value and benefit for society. The Patent Act makes clear that if a process is new and useful, it is patentable. Any test to determine which kinds of processes are patentable is unnecessary; all are patentable. Through scrupulous application of other key provisions in the Patent Act, especially 35 U.S.C. §§ 102 (novelty), 103 (obviousness) and 112 (specification), the Patent and Trademark Office and the courts can protect the public from patents that seek to take too much from society. These other provisions of the patent act, not Section 101, serve as a gatekeeper to restrict patents to those inventions that meet the requirements of other key provisions in the Patent Act. If a patent application passes muster under all provisions of the Patent Act, the inventor receives a patent – but only for the "limited times" of the grant mandated by the Constitution and embodied in 35 U.S.C. § 154. Limiting the kinds of patentable processes will reduce the incentive to patent and decrease the number of patentable inventions, causing vital and important inventions to be lost or otherwise secreted from society contrary to the purpose of patent law.

ARGUMENT

"The economic philosophy behind the clause empowering Congress to grant patents and copyrights is the conviction that encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of authors and inventors in 'Science and the useful Arts.'"[2]

I. The Statutory Language of § 101 and the Legislative Intent Support a Broad Interpretation of the Term "Process."

The Constitution grants Congress broad power to legislate to "promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."[3] The Constitution expresses a public policy of promoting innovation. In exchange for innovation, the inventor gets ownership of the commercialization of an idea for a limited period of time.

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[2] *Mazer v. Stein*, 347 U.S. 201, 219 (1954).

[3] *Diamond v. Chakrabarty*, 447 U.S. 303, 307 (1980) (citing Art. I, § 8, cl. 8).

Abraham Lincoln stated in his "Second Lecture on Discoveries and Inventions":

> Next came the Patent laws. These began in England in 1624; and, in this country, with the adoption of our constitution. Before then, any man might instantly use what another had invented; so that the inventor had no special advantage from his own invention. The patent system changed this; **secured to the inventor, for a limited time, the exclusive use of his invention; and thereby added the fuel of interest to the fire of genius, in the discovery and production of new and useful things**. (emphasis added)

Congress created the Patent Act to embody these ideals. The law struck a careful balance between competing public and private interests in order to promote innovation. In this regard, the statute promises:

> Whoever invents or discovers **any new and useful process**, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the

> conditions and requirements of this title.[4]

The central inquiry in this case turns on how broadly to construe "*process*" when determining what constitutes patentable subject matter. The Court in *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*[5] and in *Diamond v. Chakrabarty*[6] recognized that § 101 has broad scope.[7] The Court in *Chakrabarty* stated:

> The subject-matter provisions of the patent law have been cast in broad terms to fulfill the constitutional and statutory goal of promoting "the Progress of Science and the useful Arts" with all that means for the social and economic benefits envisioned by Jefferson. Broad general language is not necessarily ambiguous when congressional objectives require broad terms.[8]

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[4] 35 U.S.C. § 101 (emphasis added).

[5] *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124 (2001).

[6] *Chakrabarty*, 447 U.S. 303.

[7] *J.E.M. Ag Supply, Inc.*, 534 U.S. 130-131.

[8] *Chakrabarty*, 447 U.S. 315.

In the middle of the 19th Century, the Court stated: "[A process] is included under the general term 'useful art'. An art may require one or more processes or machines to produce a certain result or manufacture."[9] Later in the 19th Century the Court explained: "A process is an act or mode of acting, . .a conception of the mind, seen only by its effects when being executed or performed."[10] Though these cases do not address the term "process" in § 101, they demonstrate the historically broad interpretation of § 101.

In addition, the legislative intent calls for "process" to be interpreted broadly. In *Chakrabarty*, the Court noted that by choosing expansive terms such as "manufacture," "compositions of matter" and the comprehensive modifier "any" in § 101, Congress intended the patent laws would receive broad scope.[11] Similarly, Congress' intent in choosing an expansive word such as "process" ensured that § 101 would be construed broadly for processes that could be patented.

Section 100(b) also supports a broad construction of "process." The section states that "process" "means process, art, or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material."[12]

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[9] *Corning v. Burden*, 56 U.S. 252, 267 (1854).

[10] *Tilghman v. Proctor*, 102 U.S. 707, 728 (1881).

[11] *Chakrabarty*, 447 U.S. 308.

[12] 35 U.S.C. § 100(b).

If Congress intended a narrow interpretation of "process," it could have defined the term with limiting language. However, Congress nowhere expresses such intent. Instead, §§ 100(b) and 101 use expansive language to define "process." Thus, any narrow interpretation of the term "process," even if only limited to a machine or transformation of matter, is contrary to the language of § 101.

Further, the Court in *Chakrabarty* explained that the legislative history also supported a broad construction of the § 101.[13] In particular, the Court stated:

> The Patent Act of 1793, authored by Thomas Jefferson, defined statutory subject matter as "any new and useful art, machine, manufacture, or composition of matter, or any new or useful improvement [thereof]." The Act embodied Jefferson's philosophy that "ingenuity should receive a liberal encouragement." Subsequent patent statutes in 1836, 1870, and 1874 employed this same broad language. In 1952, when the patent laws were recodified, Congress replaced the word "art" with "process," but otherwise left Jefferson's language intact. The Committee Reports accompanying the 1952 Act inform us that Congress

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[13] *Chakrabarty*, 447 U.S. 308.

> intended statutory subject matter to "**include anything under the sun that is made by man.**"

Thus, an examination of the patent laws and the legislative intent all indicate that the term "process" was included to ensure that any process or method is patentable so long as it withstands the Patent Act's other requirements.

II. The Patent Act Already Limits What Inventions May Be Patented

Instead of the courts inventing their own restrictions on patentable subject matter through interpretation of § 101, the public policy of promoting innovation is best served by allowing the rest of the Patent Act, §§ 102, 103 and 112, to provide the only limits on the types of patentable processes.

A. Inventions Must Be Novel

Section 102 describes the statutory novelty required for patentability:[14]

> A person shall be entitled to a patent unless --
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the

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[14] *In re Bergstrom*, 57 C.C.P.A. 1240, 1249 (CCPA 1970).

> invention thereof by the applicant for patent, or
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country more than one year prior to the date of application for patent in the United States. . .[15]

In *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, [16] the Court stated:

> Sections 102(a) and (b) operate in tandem to exclude from consideration for patent protection knowledge that is already available to the public. They express a congressional determination that the creation of a monopoly in such information would not only serve no socially useful purpose, but would in fact injure the public by removing existing knowledge from public use.[17]

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[15] 35 U.S.C. § 102(a) and (b).

[16] *Bonito Boats, Inc.*, 489 U.S. 141 (1989).

[17] *Bonito Boats, Inc.*, 489 U.S. at 148.

Further, in *Pfaff v. Wells Elecs*[18] the Court stated:

> Consistent with these ends, § 102 of the Patent Act serves as a limiting provision, both excluding ideas that are in the public domain from patent protection and confining the duration of the monopoly to the statutory term.

That is, § 102 ensures that even processes that may constitute patentable subject matter under § 101, nonetheless may not deserve patent protection because these processes are not "novel" under § 102. Thus, § 102 serves as one constraint on ensuring that not *any* process receives patent protection.

B. Inventions Cannot Be Obvious Variations of the Prior Art

Section 103's "nonobviousness" requirement further limits patent protection to material that cannot be readily created from publicly available material.[19] Specifically, § 103(a) forbids issuance of a patent when "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains."[20] Thus, processes that may constitute patentable subject matter under § 101 still may not receive patent protection because they do not withstand the nonobviousness requirements of § 103. The Patent Act therefore provides the necessary limits on the broad term "process" used in § 101.

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[18] *Pfaff v. Wells Elecs, Inc.*, 525 U.S. 55, 64 (1998).

[19] *Id.* at 150.

The Court's recent decision in *KSR* further protects the public from the over breadth concerns that may arise from construing the term "process" broadly:

> The principles underlying these cases are instructive when the question is whether a patent claiming the combination of elements of prior art is obvious. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is

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[20] *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007).

> obvious unless its actual application is beyond his or her skill.[21]

The Court further recognized that as technologies continue to advance, a new threshold will be used to determine whether the innovation is ordinary or nonobvious.[22] Specifically, the Court stated:

> We build and create by bringing to the tangible and palpable reality around us new works based on instinct, simple logic, ordinary inferences, extraordinary ideas, and sometimes even genius. These advances, once part of our shared knowledge, define a new threshold from which innovation starts once more. And as progress beginning from higher levels of achievement is expected in the normal course, the results of ordinary innovation are not the subject of exclusive rights under the patent laws. Were it otherwise patents might stifle, rather than promote, the progress of useful arts. See U.S. Const., Art. I, § 8, cl. 8. These premises led to the bar on patents claiming obvious subject matter established in Hotchkiss and codified in § 103. **Application of the bar must not be confined**

---

[21] *KSR*, 550 U.S. 417.

[22] *Id.* at 427.

> **within a test or formulation too constrained to serve its purpose.**[23]

As the Court recognized in *KSR*, imposing constraints risks not achieving the constraint's purpose. Just as the "teaching, suggestion, motivation" (TSM) test for nonobviousness was too constraining, a narrow interpretation of "process" also will be too constraining when deciding what constitutes patentable subject matter.

C. The Invention Must Be Fully Disclosed

Section 112 limits patents to those which provide full disclosure of the invention:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.[24]

Thus, through § 112, Congress limited patent protection only to those patents having a clear description of the invention. The patent must provide enough description to enable others to make and use the invention. Finally, the patent must also disclose the best mode of carrying out the invention. These requirements ensure that patentees do not receive overly broad scope in patent protection. Instead, they only receive protection for what they really invented. Consequently, the public receives a full and fair disclosure in exchange. Therefore, *any* process may constitute patentable subject matter, but it will receive patent protection only if it meets all other requirements of the Patent Act, including §§ 102, 103 and 112.

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[23] *Id.* (emphasis added).

[24] 35 U.S.C. § 112, ¶ 1 .

D. Inventions Must Be Useful

In *Brenner v. Manson*[25], the Court explained:

> The basic *quid pro quo* contemplated by the Constitution and the Congress for granting a patent monopoly is the benefit derived by the public from an invention with substantial utility. Unless and until a process is refined and developed to this point - where specific benefit exists in currently available form - there is insufficient justification for permitting an applicant to engross what may prove to be a broad field.[26]

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[25] *Brenner v. Manson*, 383 U.S. 519 (1966).

[26] *Id.* at 534-35.

Section 101 explicitly limits patent protection to those processes that have utility by requiring, "Whoever invents or discovers any new and *useful* process" should be entitled to patent protection.[27] As such, § 101 does not allow all processes to receive patent protection -- only those processes that provide some *utility*. The Court in *Brenner* recognized that allowing inventors to receive a patent on a process that did not have any utility would enable inventors to obtain a hunting license.[28] That is, it would reward them merely for searching for some invention, regardless of whether the invention provided any benefit to the public.[29]

III. The Patent Act Includes an Absolute Limit on Any Patent that Overcomes the Hurdles of Novelty, Nonobviousness and Disclosure

Patents are not diamonds: unlike diamonds, patents do not last forever. In time, patents expire. Through the simple mechanism of expiration, the framers in the Constitution and Congress in the Patent Act provided absolute limits on what is patented. Under § 154, most patents expire twenty years after the inventor first applied for patent protection. Thus, even if an invention passes the novelty, nonobviousness and usefulness tests, and the patent specification satisfies the disclosure requirements, no matter how big or small the invention, the patent will expire.

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[27] 35 U.S.C. § 101

[28] *Brenner*, 383 U.S. at 534-35.

[29] *Id.*

Experience shows that patent applications are not all treated equally, and, in practice, patent pendency varies. The PTO's published statistics demonstrate that examination of applications for patents in some areas of technology take longer than applications in other areas. Congress and the PTO through resource allocation have in effect controlled the patent term of different types of inventions. The time from filing of a patent application to its grant for business methods are the longest. Pendency can grow for many different reasons. The PTO's own backlog leads to deferral of the start of examination on many patent applications. PTO procedures requiring several patent examiners to review allowance of patents in some fields also delays the grant of patents and limits the scope of their claims. Although informal, these procedures suppress some types of patents and have been particularly effective against business method applications. This is long-standing practice, and one which Congress certainly knows and can control. Clearly, there is no need for the Judiciary Branch to intervene.

IV. Limiting the Kinds of Patentable Processes Can Only Be Overreaching Judicial Legislation

Any tests by the judiciary to limit processes deemed patentable are directly contrary to the language and intent of the Patent Act. The Patent Act says what it means and means what it says when it states that a patent may be obtained for "**any** new and useful process."

The Patent Act does not recite that only chemical processes may be patented. The Patent Act does not recite that only processes performed by a machine may be patented. The Patent Act does not recite that only processes performed by a human may be patented. The Patent Act does not recite that business methods and software may not be patented. The Patent Act simply recites that "**any** new and useful process" may be patented.

There is no basis in the Patent Act or its history that hints that the kinds of processes that are patentable subject matter should be less than "any." Reading limitations that Congress did not intend into the statute runs the risk of stifling innovation instead of encouraging innovation. Inventors and investors need encouragement to invest in research and innovation. They should know their successful research and innovation will be rewarded. Narrowly interpreting "process" hinders inventors from passionately pursuing their ideas since there would be no reward for investing time, capital, resources and effort in pursuing their innovative ideas.

The Patent Act reflects a balance created by Congress between public and private interests, one which this Court has been loathe to alter.[30] By excluding business method inventions and other kinds of processes from patentability, companies will be forced to maintain more valuable knowledge in secrecy. This will decrease the pool of prior art and will create little incentive for inventors to disclose their inventions. The underlying Constitutional purpose of the patent system and Congress' balances will be upset. "Calibrating rational economic incentives, however, like fashioning new rules in light of new technology is a task primarily for Congress not the courts."[31]

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[30] *See Stewart v Abend*, 495 U.S. 207, 230 (1990) ("it is not our role to alter the delicate balance Congress has labored to achieve").

It is within the purview of Congress to change what constitutes patentable subject matter.[32] This is not a judicial task.

CONCLUSION

In sum, a broad interpretation of the term "process" is essential to maintain the public policy of promoting innovation. If the process passes the tests Congress established in §§ 102, 103 and 112, it is patentable. The Patent Act neither expresses nor mandates any further test. "[T]he applicant whose invention satisfies the requirements of novelty, nonobviousness, and utility, and who is willing to reveal to the public the substance of his discovery and 'the best mode . . . of carrying out his invention,' is granted 'the right to exclude others from making, using, or selling the invention throughout the United States' for a limited time."[33] Accordingly, the public policy of promoting innovation is best served by defining the term "process" broadly in § 101 and not limiting the term in any manner. Let §§ 102, 103, and 112 remain the limitation on patentable subject matter.

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[31] *Eldred v. Ashcroft*, 537 U.S. 186, 207 (2003).

[32] In addressing changes to the Copyright Act, the Court reached the same conclusion: "The [Copyright Term Extension Act] reflects judgments of a kind Congress typically makes, judgments we cannot dismiss as outside the Legislature's domain." *Id.* at 205.

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[33] *Bonito Boats*, 489 U.S. at 150 (citation omitted).

For the foregoing reasons, we, the Conejo Valley Bar Association, urge the Court to reject the Federal Circuit's machine-or-transformation test, and any test for patentability, except those expressed in the Patent Act.

Respectfully submitted,

Steven C. Sereboff
M. Kala Sarvaiya
Mark A. Goldstein
Michael D. Harris
SoCal IP Law Group LLP
310 N Westlake Blvd., Ste. 120
Westlake Village, California 91362
(805) 230-1350
ssereboff@socalip.com

COUNSEL FOR AMICUS CURIAE
CONEJO VALLEY BAR ASSOCIATION

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AMICUS
CURIAE
BRIEF

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In The
Supreme Court of the United States

◆

BERNARD L. BILSKI and RAND A. WARSAW,

Petitioners,

v.

JOHN J. DOLL, Acting Under Secretary of Commerce for Intellectual Property and Acting Director of the United States Patent and Trademark Office,

Respondent.

◆

On Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

◆

BRIEF OF *AMICI CURIAE* DOLBY LABORATORIES, INC., DTS, INC., AND SRS LABS, INC., IN SUPPORT OF NEITHER PARTY

◆

JOHN L. COOPER*
NAN E. JOESTEN
DEEPAK GUPTA
FARELLA BRAUN + MARTEL LLP
235 Montgomery Street
San Francisco, CA 94105
(415) 954-4400

Counsel for Amici Curiae

**Counsel of Record*

COCKLE LAW BRIEF PRINTING CO. (800) 225-6964
OR CALL COLLECT (402) 342-2831

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QUESTIONS PRESENTED

Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent-eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

Whether the Federal Circuit's "machine-or-transformation" test for patent-eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273(a)(3).*

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* The *Amici's* argument is limited to the first question presented: whether the machine-or-transformation test is an appropriate test for patentability. The *Amici* do not express an opinion on the second question on which *certiorari* was granted.

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STATEMENT OF INTEREST

Dolby Laboratories ("Dolby"), DTS, Inc. ("DTS") and SRS Labs, Inc. ("SRS") (herein "*Amici*") develop and deliver audio products and technologies that make the entertainment experience more realistic and immersive.

Dolby has over 1100 employees, including technicians, engineers, researchers and scientists who are vital to Dolby's patent process. Its worldwide portfolio includes over 1500 issued patents and over 2000 pending applications. For more than four decades, Dolby has provided high-quality audio and surround sound in cinema, broadcast, home audio systems, cars, DVDs, headphones, games, televisions, and personal computers. Dolby's technologies have been included in more than 3 billion products through licenses with major manufacturers throughout the world. For fiscal year 2007, Dolby spent more than $44 million for research and development and for fiscal year 2008 more than $62 million.[1]

DTS is a major provider of high quality branded entertainment technologies, which have been incorporated in hundreds of millions of consumer electronics products manufactured and sold globally by licensee customers. It has a substantial base of intellectual property assets, including 42 patent families and 110 individual patents granted worldwide.

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[1] The parties have consented to the filing of this brief. No counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than *Amici*, their members, or their counsel made a monetary contribution to this brief's preparation or submission.

SRS develops audio technologies that enable users to enjoy natural, restored sound from a wide variety of audio devices. Billions of people worldwide have purchased audio devices that use SRS' technologies. These technologies include advanced audio enhancement, dialog clarity, voice intelligibility, and surround sound processing. SRS also has a large worldwide patent portfolio that includes over 100 issued patents and dozens of pending applications.

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INTRODUCTION AND SUMMARY OF ARGUMENT

In the 28 years since *Diamond v. Diehr*, 450 U.S. 175 (1981), was decided, this Court has not addressed the growing ambiguity in Federal Circuit jurisprudence regarding the patentability of processes that apply scientific algorithms to bring into existence valuable new technological applications. Limiting patentable processes to those tied to particular machines or transformations of articles, as required by the standard set forth in *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008), is not required by Title 35, Section 101 of the United States Code as applied in *Diehr*, and will unreasonably foreclose valuable technological development.

In the current information age, such a limitation risks discouraging innovation in new and unforeseen areas of technology. An example of such valuable technology that should be unquestionably patentable is the analysis of echocardiographic signals that measured heart rate as addressed in *Arrhythmia Research Tech., Inc. v. Corazonix Corp.*, 958 F.2d 1053 (Fed. Cir. 1992). Digital audio signals represent physical phenomena just the same as echocardiographic signals do. Audio signal processing utilizes technology such as psychoacoustics to develop valuable processes for operating on, transforming and synthesizing new digital audio signals. This is precisely the kind of innovation that has resulted in the *Amici*'s numerous technological innovations that have enhanced the quality of entertainment.[2] Practical applications of digital signal processing meet the criteria set forth in *Diehr*. The manipulation of an audio signal by application of scientific principles to achieve a result that has practical application is patentable irrespective of whether the process is tied to a particular machine or whether digital audio signals qualify as "articles."

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[2] Company founder Ray Dolby was awarded a Technical Grammy® from the Recording Academy for "ma[king] a contribution of outstanding technical significance to the recording field." Dolby has similarly received two Scientific and Engineering Awards from the Academy of Motion Picture Arts and Sciences. DTS has also received a Scientific and Engineering Award from the Academy of Motion Picture Arts and Sciences.

Bilski has introduced uncertainty into, and potentially narrowed the standard for, patentability that this Court should now clarify. *Amici* take no position on whether the business method claims in *Bilski* should be rejected. But in the words of Judge Newman in dissent in *Bilski*, "[u]ncertainty is the enemy of innovation." 545 F.3d at 977. If patentability of those claims is rejected, it should be because the concept of hedging risks in commodities trading is of a non-technical nature.[3] That the *Bilski* claims are not traditional industrial processes that transform physical articles is immaterial. The Court should not throw out the "babies" – patents for valuable technological innovations in the well-established field of signal processing – with what it may view as the "bathwater" of business method patents.

◆

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[3] Article 1, Section 8 of the U.S. Constitution sets forth the purpose of the U.S. Patent System as being "to promote the Progress of Science and useful Arts."

ARGUMENT

I. THE *BILSKI* TEST INTERJECTED AMBIGUITY INTO THE QUESTION OF WHAT CONSTITUTES PATENTABLE SUBJECT MATTER AND HAS DISRUPTED THE SETTLED EXPECTATIONS OF INFORMATION AGE BUSINESSES.

Although *Bilski* addressed only an application for a business method patent, the standard it adopted impacts a far wider range of inventions than just business methods. Under *Bilski,* a process is patentable if it meets the exclusive test of being "(1) . . . tied to a particular machine or apparatus, or (2) [. . .] transform[ing] a particular article into a different state or thing." *Bilski*, 545 F.3d at 954, 964-65 ("the machine-or-transformation test is the only applicable test and must be applied"). This test is problematic because it calls into doubt whether information age inventions that operate on data or waveforms are eligible for patenting.

The *Bilski* test represents a significant departure from the standard for patent-eligibility set forth in *Diehr*. *Diehr* established a narrow and well-defined set of exceptions to patentability, and required only that a process have practical application to be eligible. Under *Diehr,* information age technologies have routinely been held patent-eligible, and as a consequence, the field has flourished. *Bilski* threatens to disrupt the audio technology industry and undermine the settled expectations of intellectual property owners by substituting ambiguity in the place of *Diehr*'s certainty.

A. The "Machine-or-Transformation Test" Is Ambiguous As Applied To "Information Age" Inventions Like Digital Signal Processing, Because Such Inventions Operate On Data And Waveforms Rather Than Physical "Articles."

The *Bilski* test limits patent-eligibility under its transformation prong to processes that transform "particular articles." The word "article" carries with it sufficient industrial age baggage as to create confusion in the contemporary information age. Because digital signals and data might not be regarded as "articles" due to their incorporeal nature, processes that operate on signals and data might now be excluded from patent-eligibility at the threshold.[4] This, *Amici* submit, would be error.

---

[4] In *In re Nuijten*, 500 F.3d 1346 (Fed. Cir. 2007), the Federal Circuit traversed each of the categories enumerated in 35 U.S.C. § 101 and found that an audio signal was neither a process, machine, manufacture or composition of matter and therefore such a signal did not itself qualify as patentable subject matter. In reaching this conclusion, the court made a determination that such a signal is not an "article." The court reasoned that an "article" is "a particular substance or commodity" and further stated, in reliance on dictionary definitions:

> These definitions address "articles" of "manufacture" as being **tangible articles** or **commodities**. **A transient electric or electromagnetic transmission does not fit within that definition.**

(Continued on following page)

Such technical inventions are fundamentally different from business methods and should remain patent-eligible. Digital audio signals, for example, are representations of disturbances of sound waves traveling through the air. Therefore, they represent something physical. When translated back into sound waves they impact human eardrums. They can be shaped and compressed much like the uncured rubber that was at issue in *Diehr*. Digital audio signal processing utilizes research in psychoacoustics to develop valuable processes for operating on, transforming and synthesizing new digital audio signals. These processes epitomize the application of science to the creation or transformation of structures, and are a far cry from business methods that typically deal with human social relationships, legal obligations and markets.

In its attempt to rein in business methods, *Bilski* has created uncertainty as to the patentability of technology for processing audio waveforms and other similar inventions that are the focus of extensive investment in the contemporary information age. That the machine-or-transformation test effectively lumps together such inventions that represent the practical application of technical principles with business methods, demonstrates just how far astray the Federal Circuit has gone in *Bilski*.

Id. at 1356 (emphasis added). Accordingly, the court concluded that audio signals lack the substance and tangibility requisite to being an article.

B. *Bilski* Admits Its Own Troubling Ambiguity.

The *Bilski* ruling expressly acknowledges the ambiguity that may result from applying its test in the realm of "information age" processes:

> [T]he main aspect of the transformation test that requires clarification here is what sorts of things constitute "articles" such that their transformation is sufficient to impart patent-eligibility under § 101. It is virtually self-evident that a process for a chemical or physical transformation of *physical objects or substances* is patent-eligible subject matter. . . . **The raw materials of many information-age processes, however, are electronic signals and electronically-manipulated data.** And some so-called business methods, such as that claimed in the present case, involve the manipulation of even more abstract constructs such as legal obligations, organizational relationships, and business risks. **Which, if any, of these processes qualify as a transformation or reduction of an article into a different state or thing constituting patent-eligible subject matter?**

See Bilski, 545 F.3d at 962 (bold emphasis added). *Bilski*'s troubling ambivalence is even more apparent in its holding:

> [C]laim 1 does not involve the transformation of any physical object or substance, **or an electronic signal representative of**

> **any physical object or substance**. Given its admitted failure to meet the machine implementation part of the test as well, the claim entirely fails the machine-or-transformation test and is not drawn to patent-eligible subject matter.

Id. at 964 (bold emphasis added). Thus, in *Bilski* itself, the Federal Circuit applied an expanded scope of the second prong of its test, one which, correctly, *Amici* contend, includes processes that transform "**an electronic signal** representative of any physical object or substance." *Id.* (emphasis added).

This prompts the question of whether the second prong of the test is limited to "articles" at all, whether signals and data are "actually articles," or whether data and signals are not articles and may be excluded from patent-eligibility. What is clear is that technology companies should not have to bear the cross of *Bilski*'s uncertainty. *Bilski*'s ambivalent insertion of an industrial age "article" requirement within its test for patent-eligibility has done violence to the settled expectations of intellectual property leaders like the *Amici* and has established what amounts to bad economic policy. By narrowing and interjecting uncertainty into whether the transformation and analysis of waveforms representing physical phenomena may be patentable, *Bilski* casts a cloud of uncertainty over such far-ranging technology fields as audio-visual compression and analytics, medical diagnostics, noise reduction and seismic analysis. Judge Newman in dissent in *Bilski* was correct: "Uncertainty is the enemy of innovation." *Id.* at 977. The uncertainty created by *Bilski* is neither required by precedent nor proper as a matter of policy.

C. Application Of *Bilski* Has Caused Serious Problems.

Bilski's machine-or-transformation test does not merely have the **potential** to cause confusion and doubt with respect to the patent-eligibility standard, it has **actually** caused such problems. For instance, the experience of the *Amici* has been that Examiners appear to be so uncomfortable with the vagueness of the transformation prong that they routinely reject all claims to digital audio coding processes that do not unambiguously satisfy the machine prong. For example, Dolby is currently pursuing patent applications containing process claims that explicitly recite innovative transformative operations on audio data. That the processes recited by these claims constitute practical applications of technological principles is beyond question. However, Examiners routinely hold that such claims are directed to nonstatutory subject matter. In particular, Examiners insist that patent-eligibility can only be achieved by adding to the claims phrases such as "wherein X is implemented by a digital signal processor" or "wherein Y is performed by a computing device." Based on these experiences, it appears that the machine-or-transformation test has effectively reduced patent-eligibility determinations within the Patent and

Trademark Office to magic word expeditions, epitomizing the elevation of form over substance.

D. The Machine-or-Transformation Test Elevates Form Over Substance.

Due to its focus on very specific claim language characteristics, the machine-or-transformation test leads to the rejection of legitimate technical innovations that do not contain "magic words" and the allowance of claims for non-technical processes that do.

Any claim, even one for a business method or an abstract idea, could be formulated to comply with the machine-or-transformation test with clever draftsmanship. For example, if the phrase "wherein the method is performed by a computing device" is added, the claim may pass muster under the U.S. Patent Office's current application of the machine-or-transformation test.

Prior to the *Bilski* decision, it would generally have been considered bad practice to recite specific hardware in a claim to a method that is hardware-independent, or to recite what is represented by data in a claim to a method that is content-independent. Consequently, adopting the machine-or-transformation requirement at this point may retroactively invalidate innumerable already-issued claims to legitimate technological innovations.

II. THE *BILSKI* TEST DEPARTS FROM *DIEHR*'S VIEW OF PATENTABILITY.

A. Under *Diehr*'s Holding, The Only Exclusions From Patent-Eligibility Are "Laws Of Nature, Natural Phenomena, And Abstract Ideas."

The machine-or-transformation test, like other now-abandoned patent-eligibility tests that came before it, purports to be rooted in the policies articulated in *Diamond v. Diehr*, 450 U.S. 175 (1981). The *Diehr* standard, however, was not so constricted as to limit patent-eligibility to processes that are "tied to a particular machine" or transform a "particular article."

Diehr took a broad view of what constitutes a "process" and imported no extrinsic limitations to Section 101's pronouncement that processes are patentable. The Court noted that Section 101 imposes no restrictions on process patentability other than that the process be new and useful. *Diehr*, 450 U.S. at 183 (*citing Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876) ("If new and useful, [a process] is just as patentable as is a piece of machinery.")); *see also* 35 U.S.C. § 101. The Court further noted that "Congress intended statutory subject matter to include anything under the sun that is made by man." *Diehr*, 450 U.S. at 182 (citation omitted).

In *Diehr*, where a process was transformative, its eligibility for patenting was "not altered by the fact that in several steps of the process a mathematical equation and a programmed digital computer are used." *Id.* at 185.[5] To the contrary, the Court held that "a process may be patentable, irrespective of the particular form of the instrumentalities used. . . ." *Id.* at 182-83 (citation omitted).

Diehr was a culmination of the Court's maturing views on computer software patenting that began first with *Gottschalk v. Benson,* 409 U.S. 63 (1972) and then *Parker v. Flook,* 437 U.S. 584 (1978). In both *Benson* and *Flook,* claims were ineligible for patenting because the applicants claimed what the Court believed to be nothing more than abstract mathematical formulas that were "like laws of nature."[6]

Diehr represented the **inverse** proposition – a process that **applied** a mathematical formula **could**

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[5] Significantly, the process at issue in *Diehr* differed from the prior art only with respect to steps performed internal to the general purpose digital computer involved in the rubber-curing process. The *Diehr* Court's allowance of such claims clearly signaled that an applicant may be entitled to patent protection even when the inventor's contribution to the art occurs entirely within a computing device.

[6] In *Flook*, the Court analogized such formulas to the Pythagorean theorem. *Flook*, 437 U.S. at 590. In *Diehr*, the Court analogized such formulas to Einstein's equation $E=mc^2$ and Newton's law of gravity. *Diehr*, 450 U.S. at 185. From these analogies, it is clear that the Court intended the exclusion to cover only formulas that mathematically represent laws of nature. However, in the context of computer-implemented processes, such as digital signal processing, many "formulas" are based entirely on human ingenuity and not natural laws, and are therefore not "like laws of nature."

be patentable where the result was practical, allowing a claim to an improved curing process for rubber that used the Arrhenius equation. So long as the equation was practically applied, the process that used the equation fell outside of the narrow exclusions set forth in *Benson* and *Flook*. The Court stated:

> It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection. (Internal citations omitted). As Justice Stone explained four decades ago: "While a scientific truth, or the mathematical expression of it, is not a patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be." (quoting *Mackay Radio & Telegraph Co. v. Radio Corp. of America*, 306 U.S. 86, 94 (1939)).

Diehr, 450 U.S. at 187-88 (emphasis in original). Thus, *Diehr* held that using mathematical steps is not anathema to patent-eligibility where a practical result follows from the application of such principles. After *Diehr*, only "laws of nature, natural phenomena, and abstract ideas" are patent-ineligible. *Diehr*, 450 U.S. at 185.[7] Because of this holding, *Diehr* represented a **starting point** for future invention in the realm of computer and information technology. It was not a cage with which to contain the contemporary information age.

---

[7] *Diehr* confirmed that *Benson* and *Flook* stand for "**no more**" than the exclusion of those three categories from patent-eligibility. *Id.* at 185-86 (emphasis added).

B. *Diehr*'s Practical Application Requirement Did Not Require Transformation Of Physical "Articles."

Diehr held only that claims to a practical application – internal mathematical operations notwithstanding – are separate and apart from the sort of abstract patent-ineligible claims in *Benson* and *Flook*.[8] The *Bilski* Court placed too much emphasis on *Diehr*'s use of the term "article" in the statement: "Transformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines." *Diehr*, 450 U.S. at 184 (citation omitted).

---

[8] In 1994, the Federal Circuit illustrated a clear understanding of this distinction when it stated:

> [T]he proper inquiry in dealing with the so called mathematical subject matter exception to § 101 alleged herein is to see whether the claimed subject matter *as a whole* is a disembodied mathematical concept, whether categorized as a mathematical formula, mathematical equation, mathematical algorithm, or the like, which in essence represents nothing more than a 'law of nature,' 'natural phenomenon,' or 'abstract idea.' If so, *Diehr* precludes the patenting of that subject matter.

In re Alappat, 33 F.3d 1526, 1544 (Fed. Cir. 1994, *en banc*) (emphasis in original).

Diehr found that even a process with mathematical elements could be patent-eligible where as a whole the claim is drawn to some practical application; thus, *Diehr* was concerned with the practical applications produced by the steps in a transformative process, not the nature of the objects in those steps. The Court did not in any way limit what the objects of such patent-eligible applications could be. Nor did it need to in order to harmonize *Benson* and *Flook*.

Quite to the contrary, the *Diehr* opinion oscillates between the use of the term "article" – which has connotations of tangibility and physicality – and the use of the term "structure" – which is broader. Further, *Diehr* did not limit patentability to transformation of physical articles, but noted only that "articles" are just **examples** of something that patent-eligible processes might transform. *Diehr,* 450 U.S. at 192 ("On the other hand, when a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (*e.g.*, transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101").

By imposing the requirement that an article must be transformed to be patentable, *Bilski* runs counter to *Diehr*'s express prohibition against narrowing the scope of patent-eligibility:

> . . . in dealing with the patent laws, we have more than once cautioned that "courts should not read into the patent laws limitations and conditions which the legislature has not expressed."

Id. at 182 (*quoting Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980)) (internal quotation omitted). Unfortunately, these warnings have largely gone unheeded.[9] The judicial history of Section 101 illustrates a repeated cycle in which lower courts have used statements from *Benson*, *Flook*, and *Diehr* as the basis for patent-eligibility tests that go beyond those "long-established principles," only later to abandon those tests when it becomes evident that they exclude subject matter that the patent system was clearly intended to cover.[10] The establishment of

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[9] *In re Alappat*, 33 F.3d 1526, 1543 (Fed. Cir. 1994, *en banc*) stands as a noteworthy exception. The *Alappat* Court recognized that:

> A close analysis of *Diehr, Flook*, and *Benson* reveals that the Supreme Court never intended to create an overly broad, fourth category of subject matter excluded from § 101. Rather, at the core of the Court's analysis in each of these cases lies an attempt by the Court to explain a rather straightforward concept, namely, that certain types of mathematical subject matter, standing alone, represent nothing more than *abstract ideas* **until reduced to some type of practical application**, and thus that subject matter is not, in and of itself, entitled to patent protection.

(Bold emphasis added).

[10] *See, e.g., Bilski*, 545 F.3d at 959 ("we conclude that the *Freeman-Walter-Abele* test is inadequate"), and *Bilski,* at 959-60

(Continued on following page)

a machine-or-transformation test by the Federal Circuit in *Bilski* is merely the latest iteration of that cycle. Similar to each of its predecessor tests, that test excludes a wide range of legitimate technological innovations, and accordingly should be discarded.

III. *DIEHR* IS WELL-SUITED TO THE INFORMATION AGE.

A. Decades Of Post-*Diehr* Federal Circuit Precedent Confirm That Data And Waveform Transformation, Including Practical Applications of Digital Signal Processing, Are Properly Patent-Eligible.

The principles set forth in *Diehr* regarding patentable subject matter under Section 101 have proven to be just as applicable to contemporary information technology as they were to the computer-aided industrial rubber curing process *Diehr* specifically addressed. Three decades of post-*Diehr* precedent confirm that practical applications of digital signal processing and other methods that operate on incorporeal forms of data are still entitled to patent protection.

In *In re Abele*, 684 F.2d 902 (Cust. & Pat. App. 1982), the predecessor court to the Federal Circuit Court of Appeals reviewed "an improvement in CAT

("we also conclude that the 'useful, concrete and tangible result' inquiry is inadequate").

scan imaging technique whereby the body [was] exposed to less radiation and, through use of a weighting function in the calculations producing the image, the artifacts [were] eliminated." *Id.* at 904. Although an independent claim drawn to a mathematical algorithm without regard to the data source was found not to be patent-eligible, the court did find that a dependent claim tied to "X-ray attenuation data" was patentable. *Id.* at 908-09. The dependent claim did not recite "a mere procedure for solving a given mathematical problem." *Id.* at 909. Rather, like in *Diehr*, the improvement "reside[d] in the application of a mathematical formula within the context of a process which encompasse[d] significantly more than the algorithm alone." *Id.*[11]

In *Arrhythmia Research Tech., Inc. v. Corazonix Corp.*, 958 F.2d 1053 (Fed. Cir. 1992), the Federal Circuit held that a mathematical analysis of a digital representation of an echocardiographic heart reading that could identify an acute arrhythmia was patentable. The court found that though there was a mathematical aspect to the invention, the "**input signals . . . [were] related to the patient's heart function,**" the transformation of electrical signals from one form to another was itself physical, and ultimately "a signal related to the patient's heart activity," something manifestly physical, was the "resultant output." *Id.* at 1059 (emphasis added). The court expressly noted the analogy to *Diehr*, stating "applicants 'do not seek to patent a mathematical formula . . . they seek only to foreclose from others the use of that equation in conjunction with all of the other steps in their claimed process.'" *Id.* at 1059-60. The same sort of physicality relied on in *Arrhythmia* is found in digital audio signals. Audio signals relate to sound waves that travel through the air which when incident on the human ear drum create the perception of sound. They are analogous to the echocardiographic signals that measured heart rate, which were analyzed in *Arrhythmia* and held to be patentable.

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[11] In discussing *Abele*, the Federal Circuit suggested that the patent-eligible claim recognized a sufficient nexus to the physical world, noting that the "data clearly represented physical and tangible objects, namely the structure of bones, organs, and other body tissues." *See Bilski*, 545 F.3d at 963 (discussing *Abele*).

In re Nuijten, 500 F.3d 1346, 1356-57 (Fed. Cir. 2007) confirmed patent-eligibility of a process for embedding a digital watermark in a digital audio signal without comment. Claim 1 of the *Nuijten* application, which was not at issue but was mentioned by the Federal Circuit, illustrates just how well-entrenched digital audio signal processing has become as a patent-eligible field.[12] This process claim

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[12] Claim 1 is the broadest process claim allowed. It reads:

> A method of embedding supplemental data in a signal, comprising the steps of:
>
> > encoding the signal in accordance with an encoding process which includes the step of

(Continued on following page)

is not tied to a "particular machine" and it operates on nothing more than an audio "signal" to improve its quality. A *Bilski* footnote commented, "**[w]e note that the PTO did not dispute that the *process* claims in *Nuijten* were drawn to patent-eligible subject matter under § 101 and allowed those claims**." *Bilski,* 545 F.3d at 951, n.2 (bold emphasis added). Though these claims were allowed by the Patent Office, and were not criticized in *Bilski*, there is more than a mere hypothetical concern that such claims would not be deemed patent-eligible post-*Bilski*. *See* Section IC, *supra* (post-*Bilski*, the PTO is requiring machine references which wrongfully limit the scope of the invention).

Diehr allows claims that apply mathematical, scientific or technological principles to achieve a practical result. This strikes an appropriate balance between society's interest in creating incentives for companies to invest in research and development versus the need to preserve fundamental principles,

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> feeding back the encoded signal to control the encoding; and modifying selected samples of the encoded signal to represent the supplemental data prior to the feedback of the encoded signal and including the modifying of at least one further sample of the encoded signal preceding the selected sample if the further sample modification is found to improve the quality of the encoding process.

Nuijten, 500 F.3d at 1351.

abstract ideas and general scientific knowledge to the public. It should be as effective going forward as it has been since it was instituted three decades ago.

B. If *Bilski*'s Invention Is To Be Rejected Based On The Non-Technical Nature Of The Invention, The Standard Applied Should Be Precise And Unambiguous.

The claimed invention in *Bilski* is a method of hedging risks in commodities trading. The *Amici* take no position on whether the *Bilski* claims should be rejected. If, however, patentability is rejected based on the non-technical nature of the invention,[13] the standard should be articulated with sufficient precision as to leave no ambiguity that processes practically applying scientific and mathematical technological principles remain patent-eligible.

◆

CONCLUSION

This Court's jurisprudence in *Diehr* provides an appropriate roadmap for patentability into the 21st Century. Under *Diehr*, the manipulation of a waveform by application of scientific principles to achieve a result that has practical use is patentable. Not only does such a test provide certainty and consistency with prior precedent, it is proper policy as well. Furthermore, this Court should not hold that patentability requires the transformation of material or an "article" with the traditional physicality of the industrial age. Such an interpretation would do violence to innumerable technological innovations that have useful, practical application in the information age.

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[13] *See* Article I, Section 8 of the U.S. Constitution.

Respectfully submitted,

JOHN L. COOPER
FARELLA BRAUN + MARTEL LLP
235 Montgomery Street
San Francisco, CA 94105
(415) 954-4400
Counsel of Record for Amici Curiae Dolby Laboratories, DTS, Inc., and SRS Labs, Inc.

BRIAN D. HICKMAN
HICKMAN, PALERMO, TRUONG & BECKER, LLP
2055 Gateway Place, Ste. 550
San Jose, CA 95110
(408) 414-1080
Of Counsel to Dolby Laboratories

MICHAEL BIBER
HEATH HOGLUND
DOLBY LABORATORIES, INC.
100 Potrero Street
San Francisco, CA 94103
(415) 558-0200
Of Counsel to Dolby Laboratories

BLAKE A. WELCHER
WILLIAM L. JOHNSON
DTS, INC.
5171 Clareton Drive
Agoura Hills, CA 91301
(818) 827-2200
Of Counsel to DTS, Inc.

JOHN R. KING
KNOBBE MARTENS OLSON
& BEAR, LLP
2040 Main Street, Ste. 1400
Irvine, CA 92614
(949) 721-2998
Of Counsel to SRS Labs, Inc.

AMICUS
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Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,
v.
JOHN J. DOLL, ACTING UNDER SECRETARY
OF COMMERCE FOR INTELLECTUAL
PROPERTY AND ACTING DIRECTOR
OF THE UNITED STATES PATENT AND
TRADEMARK OFFICE,
Respondent.

**On Writ of Certiorari to the
United States Court of Appeals
for the Federal Circuit**

BRIEF OF DOUBLE ROCK CORPORATION, ISLAND INTELLECTUAL PROPERTY LLC, LIDs CAPITAL LLC, INTRASWEEP LLC, ACCESS CONTROL ADVANTAGE, INC., ECOMP CONSULTANTS, PIPELINE TRADING SYSTEMS LLC, REARDEN CAPITAL CORPORATION, CRAIG MOWRY AND PCT CAPITAL LLC AS *AMICI CURIAE* IN SUPPORT OF PETITIONERS

Charles R. Macedo
Counsel of Record
Anthony F. Lo Cicero
Norajean McCaffrey
AMSTER, ROTHSTEIN & EBENSTEIN LLP
90 Park Avenue
New York, NY 10016
(212) 336-8000
Counsel for Amici Curiae

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STATEMENT OF INTEREST OF *AMICI CURIAE*[1]

The various *amici curiae* sponsoring this submission ("*Amici Curiae*") reflect mid-sized and smaller members of the financial service, e-commerce, and computer-related industries. While *Amici Curiae* do not advocate that the claims at issue are entitled to be patented, each believe it is important to maintain a strong patent system that allows for all types of innovations that do not pre-empt a fundamental principle to remain patent-eligible subject matter. A detailed explanation of each *Amici Curiae* is provided in Appendix A.

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[1] The parties have consented to the filing of this brief and letters of consent have been filed with the Clerk. Pursuant to Rule 37.6, no counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than *Amici Curiae*, its members, or its counsel made a monetary contribution to its preparation or submission.

SUMMARY OF ARGUMENT

This Court's precedent provides broad guidelines on what constitutes patent-eligible subject matter:

1. the claimed subject matter must fall within one of the four statutory categories of patent-eligible subject matter–process, machine, manufacture or composition of matter (or any improvement thereof); and
2. the claimed subject matter must not preempt what the *Bilski* majority calls "fundamental principles"[2] – laws of nature, natural phenomena, or abstract ideas.

See Diamond v. Diehr, 450 U.S. 175, 185 (1981) (citing *Parker v. Flook*, 437 U.S. 584, 589 (1978) and *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)).

While this Court has found certain safe harbors that have met these broad guidelines, it has also repeatedly refused, over centuries of such precedent, to turn such safe harbors into rigid tests. *See, e.g., Flook,* 437 U.S. at 589 n.9 (rejecting argument that "this Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a 'different state or thing,'"; this Court "assume[s] that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents.") (citations omitted); *Benson*, 409 U.S. at 71 (rejecting argument that "a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing'" since "[w]e do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents."); *Tilghman v. Proctor*, 102 U.S. 707, 722 (1881) ("The patent law is not confined to new machines and new compositions of matter, but extends to any new and useful art or manufacture. A manufacturing process is clearly an art, within the meaning of the law.") (quoted in *Diehr*, 450 U.S. at 184 n.8).

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[2] *See In re Bilski*, 545 F.3d 943, 952 n.5 (Fed.Cir. 2008), *cert. granted*, 129 S.Ct. 2735 (2009).

Even the *Bilski* majority opinion by the Federal Circuit below recognized that other efforts to adopt rigid rules for determining whether a claim is patent-eligible subject matter, like the so-called "technological arts" test suggested by the U.S. Patent and Trademark Office ("USPTO") and other tests, proved "inadequate" and "insufficient." *See Bilski*, 545 F.3d at 958-61.

While much of the majority decision correctly describes this Court's binding precedent in this area, the *Bilski* majority nonetheless deviates from this Court's precedent and errs in the following important respects, which *Amici Curiae* respectfully submit that this Court should correct:

1. In the Federal Circuit's quest to find a "test or set of criteria" to "govern" the USPTO and courts in determining patent-eligibility, the *Bilski* majority erroneously adopts as the "governing test" a mechanical version of the

so-called "machine-or-transformation" test. *Bilski,* 545 F.3d at 952, 956. Adoption of this rigid rule has wreaked havoc on the stability and reliability of hundreds of thousands of issued patents (as evidenced by litigations that have begun to sprout since *Bilski*) and uncounted pending applications (as evidenced by increasingly rigid rules coming out of decisions of the Board of Patent Appeals and Interferences ("BPAI") at the USPTO). *Amici Curiae* respectfully request this Court to quiet title on meritorious inventions and refocus the inquiry on whether the claimed invention is novel, non-obvious, useful and sufficiently well-defined, as contemplated by the Patent Act.

2. The *Bilski* majority also departs from this Court's precedent and the broad statutory construction intended by Congress by ignoring the statutory definition of "process" in the Patent Act and engrafting extra-statutory limitations on patent-eligible processes. *Cf. Bilski,* 545 F.3d at 951 n.3. The majority decision also erred in failing to address the effect of the adoption of the prior user right (35 U.S.C. §273) in response to *State Street Bank & Trust Co. v. Signature Financial Group, Inc.,* 149 F.3d 1368 (Fed.Cir. 1998), and Congress' legislative acquiescence to the Federal Circuit's holding in that case.

3. The *Bilski* majority's blanket exclusion of "electronic signals and electronically-manipulated data" and "business methods,"

involving, *e.g.*, manipulation of "legal obligations, organizational relationships, and business risks"–today's "raw materials" of innovation–from being patent-eligible subject matter unless tied to a computer or some other machine (*see Bilski*, 545 F.3d at 962) is the result of a wooden analysis that is contrary to this Court's rationale in developing the transformation prong of the "machine-or-transformation" test. *See Expanded Metal Co. v. Bradford*, 214 U.S. 366 (1909). While *Amici Curiae* agree that definiteness requirements may preclude claims directed to purely mental steps from being patent-eligible subject matter, the patent-eligibility test under 35 U.S.C. §101 should turn only on whether the claim preempts an abstract idea or other fundamental principle, not on what type of transformation occurs.

4. The majority decision, which in some respects helped clarify this Court's prior precedent in *Benson*, nonetheless failed to adequately clarify whether a distinction should be drawn between a computer-implemented invention that is implemented on a general-purpose computer rather than on a specific-purpose computer. Unfortunately, much confusion has ensued at least at the BPAI and in the district courts, where mechanical distinctions have been drawn that are contrary to the underlying principles set forth in *Benson* and this Court's other governing precedent. *Amici*

Curiae respectfully request that this Court clarify that such distinctions are misplaced.

The role of patents related to financial services, e-commerce, and computers in the U.S. economy is vital. Such patents, when appropriately awarded, encourage innovation and transparency, and advance the Constitutional goal of "promot[ing] the Progress of Science and useful Arts." U.S. Const., art. I, §8, cl.8. This Court should resist temptation to bow to the outspoken minority who would undermine a system that our founding fathers thought was so important that they included it in Article I of the Constitution and enacted it into one of its earliest public laws, and which has been maintained ever since. *Amici Curiae* respectfully submit that this Court should reaffirm the broad scope of patent-eligible subject matter under §101.

ARGUMENT

In 1998, the Federal Circuit had the forethought and insight to recognize that the revolution in information technology and availability of the Internet would radically change the way that the world does business and that U.S. patent law would *need* to adapt to this new technological and commercial reality by confirming the availability of patent protection for so-called "business method" patents. First, in *State Street*, and later in *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed.Cir. 1999), the Federal Circuit followed this Court's lead in *Diamond v. Chakrabarty* to recognize that patent-eligible subject matter should be broadly construed to "include anything under the sun that is made by man." 447 U.S. 303, 308-09 (1980) (quoting S. REP. NO. 82-1979, at 5 (1952); H.R. REP. NO. 82-1923, at 6 (1952)). These decisions, an inevitable evolution in patent law based on this Court's binding precedent, fostered a renaissance in patent law.

However, as more and more business-related and computer-related patents were sought, the USPTO started to become overwhelmed. A number of "dubious quality" patents issued and were litigated. Scrutiny from the press, Congress and this Court ensued. At the core, the problems caused by these patents were based on their failure to comply with §§112, 102 and 103 of the Patent Act, rather than by any real dispute over whether those patents were patent-eligible subject matter.

A vocal minority now cries that this Court should throw the baby out with the bath water–and improperly restrict the scope of patent-eligible subject matter–because some poor quality business method patents have issued. This Court should resist that temptation. Patents play an important and useful role in our economy by fostering innovation and adding to the public storehouse of knowledge. So-called "business method" patents also have, since the founding of our nation, played an important role in our nation's development and economy. The development of the Internet and a digital economy makes that role even more important.

I. GENERAL PRINCIPLES GOVERNING PATENT-ELIGIBLE SUBJECT MATTER BASED ON THIS COURT'S PRECEDENT

The inquiry into what constitutes patent-eligible subject matter begins with the Patent Act, which reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. §101.

Thus, when an invention falls within at least one of the four enumerated categories of patent-eligible subject matter – "process," "machine," "manufacture," or "composition of matter" – with but three exceptions, such invention is patent-eligible subject matter, and must be considered under the other provisions of the patent law, *e.g.*, 35 U.S.C. §§102, 103, 112. *See, e.g., Diehr*, 450 U.S. at 185.

The *only* three exceptions are "laws of nature, natural phenomena, and abstract ideas." *Diehr*, 450 U.S. at 185 ("Excluded from such patent protection are laws of nature, natural phenomena, and abstract ideas."); *Chakrabarty*, 447 U.S. at 309.

In *Diehr*, this Court recognized the difference between an invention "of some practical method or means of producing a beneficial result or effect," which is patent-eligible subject matter, and "the result or effect itself," which is not patent-eligible subject matter. *See Diehr*, 450 U.S. at 182 n.7 (quoting *Corning v. Burden*, 56 U.S. (15 How.) 252, 267-68 (1854)).

Diehr concluded its analysis by confirming that, although a claim to a mathematical formula in the abstract is not patent-eligible subject matter since it is merely an "abstract idea," by contrast a claim containing a mathematical formula could be patent-eligible subject matter as follows:

> On the other hand, when a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (*e.g.*, transforming

> or reducing an article to a different state or thing), then the claim satisfies the requirements of §101.

Diehr, 450 U.S. at 192 (emphasis added).

Significantly, as the Federal Circuit previously recognized in *AT&T*:

> The 'e.g.' signal denotes an example, not an exclusive requirement.

172 F.3d at 1358-59.

This list was not intended to be exhaustive, as even the USPTO recognizes in its prior submission to the Federal Circuit (USPTO Fed.Cir. Supp. Br. at 8, 25), and this Court confirmed in its precedent. *See Benson*, 409 U.S. at 71; *Flook*, 437 U.S. at 589 n.9. *Cf. Bilski*, 545 F.3d at 956 n.12.

II. THE *BILSKI* MAJORITY ERRONEOUSLY DEVIATED FROM THIS COURT'S PRECEDENT

While *Amici Curiae* do not endorse the patentability of the particular patent claim at issue here, *Amici Curiae* believe that the *Bilksi* majority at the Federal Circuit erred in several fundamental ways that should be addressed and corrected by this Court.

A. The *Bilski* Majority Erroneously Adopted the "Machine-or-Transformation" Test as the Sole Governing Test

In seeking to find a "test or set of criteria" to "govern" the USPTO and courts in determining patent-eligibility, the *Bilski* majority erroneously adopts as the "governing test" a mechanical version of the "machine-or-transformation" test. *See Bilski,* 545 F.3d at 952, 956. This is the same type of error that the Federal Circuit was chastised for making in *KSR International Co. v. Teleflex, Inc.*, after it adopted the TSM test as a "rigid" rule limiting the obviousness inquiry:

> We begin by rejecting the rigid approach of the Court of Appeals.

550 U.S. 398, 419 (2007).

As discussed in Section I, the "machine-or-transformation" test is not "the" only way to establish patent-eligible subject matter, but is merely an exemplary safe-harbor recognized by this Court. The proper test is whether the claimed subject matter falls within one of the four statutory classes of subject matter, and does not preempt a so-called fundamental principle. As *Diehr* explained, *Flook* and *Benson* "stand for no more than these long-established principles." 450 U.S. at 185.

Further, in attempting to apply this rigid rule, the BPAI at the USPTO and lower courts have ended up adopting even more rigid rules without making an effort to consider the underlying rationale that guided this Court's decisions.

For example, the BPAI recently rejected a claim for synthesizing speech signals, which included computing steps, and in which two sets of signals were transformed to produce speech signals. The BPAI's analysis fails to directly address whether the claim merely preempts a fundamental principle as this Court directs. Instead it applies a wooden analysis of specific prior holdings from *In re Abele*, 684 F.2d 902 (C.C.P.A. 1982), as discussed by the *Bilski* majority, 545 F.3d at 962-63, to reject the patent-eligibility of this claimed process, even though it was not an abstract idea by any means. *See Ex parte Hardwick*, Appeal 2009-002399, slip op. at 6-9 (BPAI June 22, 2009). The test set forth in *Abele* and its prior precedent (the so-called "*Freeman-Walter-Abele* test") was one of the tests expressly rejected in *Bilski*, 545 F.3d at 958-59.

Similarly, the BPAI has sought to apply the "machine-or-transformation" test as a rigid rule to system claims, despite the Federal Circuit's warning that "[i]n *State Street*, as is often forgotten, we addressed a claim drawn not to a process but to a machine" *Bilski*, 545 F.3d at 960 n.18. *See Ex parte Atkin*, Appeal 2008-4352, slip. op. at 18 (BPAI Jan. 30, 2009) (broadly applying *Bilski* to reject not only method claims but systems claims, finding that the system claims encompassed "any and all structures for performing the recited functions" and therefore the system claims were "at least as broad as method claims ... which we have determined recite patent ineligible subject matter under *Bilski*"; Making this determination even though the system claims were more appropriately considered under §112 and also rejected on that ground.).

Rigid application by courts of the "governing" rule from *Bilski* has also resulted in other previously approved claimed methods being found to no longer be patent-eligible. For example, in *Fort Properties, Inc. v. American Master Lease, LLC*, 609 F.Supp.2d 1052 (C.D.Cal. 2009), based on a wooden analysis of the "governing" test, the district court invalidated various issued method claims in a patent relating to real estate transactions in which legal obligations are transformed and evidenced by deed shares. Again, the court did not address whether the claim, which clearly claimed one of the four statutory classes of subject matter–a process–fell into one of the exceptions, *e.g.*, was merely preempting an abstract idea.

Regardless of whether these claims have other failings, the adoption of the rigid "machine-or-transformation" test in *Bilski* has resulted in courts and the USPTO missing the point and using §101 as a gatekeeper in a manner in which it was never intended by the Patent Act as enacted by Congress or interpreted by this Court to be used. *Cf. Dann v. Johnston*, 425 U.S. 219, 221 (1976) (avoiding §101 issue in favor of §103 analysis).

B. The *Bilski* Majority Erroneously Limits the Definition of "Process" and Erroneously Adopts a Rigid Version of the "Machine-or-Transformation Test" Contrary To Clear Congressional Intent

As this Court is well aware, it is the role of Congress to set policy when it enacts statutes, the role of the executive branch (including the USPTO) to carry out the laws as enacted, and the role of the courts (including this Court and the Federal Circuit) to interpret the law. *See, e.g., Chakrabarty*, 447 U.S. at 315. This Court does not (and the Federal Circuit should not) set new policies, even if it disagrees with the policies set by current statutes. Any problems with those policies is the province of Congress.

In this regard, since this country's inception, a fundamental policy of our government has been to establish a patent system to promote the progress of the useful arts. This policy was Constitutionally set, when Congress was given the power to enact patent laws:

> To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries;

U.S. Constitution Article I, §8, cl. 8.

This power was promptly exercised in 1790 when Congress enacted the first patent act, which originally defined the scope of patent-eligible subject matter as follows:

> [A]ny useful art, manufacture, engine, machine, or device, or any improvement therein not before known or used.

Patent Act of 1790, 1 Stat. 109, 110, §1 (1790).

Shortly thereafter, in 1793, Congress revised the scope of patent-eligible subject matter to read as follows:

> [A]ny new and useful art, machine, manufacture or composition of matter, or any new and useful improvement on any art, machine, manufacture or composition of matter, not known or used before the application.

Patent Act of 1793, 1 Stat. 318-323, §1 (1793).[3]

This broad language has been left intact by Congress in every subsequent patent statute, with but small modifications in the Patent Act of 1952, resulting in the current language of §101, which read as follows:

> Whoever invents or discovers any new and useful process, machine,

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[3] Thomas Jefferson, the driving force behind early patent policy, incorporated his philosophy that "ingenuity should receive a liberal encouragement" into the patent acts. 5 WRITINGS OF THOMAS JEFFERSON 75-76 (Washington ed. 1871).

> manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent, subject to the conditions and requirements of this title.

35 U.S.C. §101.

The 1793 version included the term "arts" instead of "process," but the case law made clear that the 18th Century meaning of the term "arts" was intended to include "process":

> That a process may be patentable, irrespective of the particular form of the instrumentalities used, cannot be disputed. ... A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing. If new and useful, it is just as patentable as is a piece of machinery. In the language of the patent law, it is an art.
>
> The machinery pointed out as suitable to perform the process may or may not be new or patentable; whilst the process itself may be altogether new, and produce an entirely new result. The process requires that certain things should be done with certain substances, and in a certain order; but the tools to

> be used in doing this may be of secondary consequence.

Cochrane v. Deener, 94 U.S. 780, 787-788 (1877). *See also Diehr*, 450 U.S. at 182 ("[A] process has historically enjoyed patent protection because it was considered a form of 'art' as that term was used in the 1793 Act.").

Indeed, the 1952 Act, when changing the language, made clear both by its statutory terms and its legislative history that "process" was to be broadly construed.

In particular, the term "process" is statutorily defined in broad terms as follows:

> The term "process" means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.

35 U.S.C. §100(b).

The *Bilski* majority mistakenly characterizes this statutory definition of "process" as "unhelpful" (*Bilski*, 545 F.3d at 951 n.3), rather than recognize that it is an unrestricted definition that was ***intended*** to be broad, not merely circular.

This point is made by the Committee Reports accompanying the 1952 Act which confirm that Congress intended statutory subject matter to be very broad, when it stated:

> The definition of "process" has been added in section 100 to make it clear that 'process or method' is meant, and also to clarify the present law as to the patentability of certain types of processes or methods as to which some insubstantial doubts have been expressed.

H.R. REP. NO. 82-1923 at 6 (1952).

P.J. Federico, one of the authors of the 1952 Act, explained the rationale at the time as follows:

> This language [of §101] (other than the terminal phrase) closely follows the wording of the corresponding part of the old statute, with the exceptions that the reference to plant patents has been omitted for inclusion in another section, and the word "process" is used in place of the word "art" which appeared in the old statute. The word "art" in the corresponding section of the old statute had been interpreted by the courts as being practically synonymous with process or method, and the same word also appeared in several other sections of the statute but with somewhat different connotations (it still appears in two other sections of the new code, with different meanings). The word "process" has been used in section 101 as its meaning is more rapidly grasped than "art" which would here require

> some interpretation. The first part of the definition of process in section 100(b) states that the word "process" means process or method, as these words have long been interchangeably used in patent law, and through same superabundance of caution by someone who feared that there might possibly be some loss of a shade of meaning in dropping the word "art", it was restored in the definition so that it reads "The term 'process' means process, art or method, ..."

35 U.S.C.A. 1 (1954 ed.), *reprinted in* 75 J. Pat. & Trademark Off. Soc'y 161, 214 (1993).

Judge Newman in her dissent summed up the *Bilski* majority's error in failing to recognize that the statutory definition of "process" is not limited and is intended to be very broad as follows:

> The definition of 'process' provided at 35 U.S.C. § 100(b) is not 'unhelpful,' as this court now states, but rather points up the errors in the court's new statutory interpretation. Section 100(b) incorporates the prior usage 'art' and the term 'method,' and places no restriction on the definition. This court's redefinition of 'process' as limiting access to the patent system to those processes that use specific machinery or that transform matter, is

> contrary to two centuries of statutory definition.

Bilski, 545 F.3d at 978 (Newman, J. dissenting) (internal citations omitted).

This Court has always understood the broad breadth that was intended to be applied to that term as relating to patent-eligible subject matter. *See, e.g., Chakrabarty,* 447 U.S. at 315 (noting that "[t]he subject-matter provisions of the patent law have been cast in broad terms to fulfill the constitutional and statutory goal of promoting 'the Progress of Science and the useful Arts' with all that means for the social and economic benefits envisioned by Jefferson" and that "[b]road general language is not necessarily ambiguous when congressional objectives require broad terms."); *J.E.M. Ag Supply v. Pioneer Hi-Bred Int'l,* 534 U.S. 124, 130 (2001) ("As this Court recognized over 20 years ago in *Chakrabarty,* 447 U.S. at 308, the language of § 101 is extremely broad."); *Diehr,* 450 U.S. at 182; *State Street,* 149 F.3d at 1373.

For more than a century, this Court has made clear that "[t]he patent law is ***not*** confined to new machines and new compositions of matter, but extends to ***any*** new and useful ***art*** or manufacture. ***A manufacturing process is clearly an art, within the meaning of the law.***" *Tilghman,* 102 U.S. at 722, quoted in *Diehr,* 450 U.S. at 184 n.8 (emphasis added); *see also Cochrane,* 94 U.S. at 787-88 ("In the language of the patent law, [a process] is an art."), quoted in *Id.* at 183.

Moreover, this Court recognizes that the use of the term "any" in §101 demonstrates the broad breadth that statutory subject matter is intended to cover. *See J.E.M.*, 534 U.S. at 130; *Chakrabarty*, 447 U.S. at 308 (In modifying the terms of §101 "by the comprehensive 'any,' Congress plainly contemplated that the patent laws would be given wide scope.").

Further, this Court has made clear "that courts 'should not read into the patent laws limitations and conditions which the legislature has not expressed.'" *Chakrabarty*, 447 U.S. at 308 (quoting *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 199 (1933)). *See also, e.g., TRW Inc. v. Andrews*, 534 U.S. 19, 31 (2001) ("It is 'a cardinal principle of statutory construction' that 'a statute ought, upon the whole, to be so construed that ... no clause, sentence, or word shall be superfluous, void, or insignificant.'" (citation omitted)); *Moskal v. United States*, 498 U.S. 103, 109 (1990) ("[A] court should 'give effect, if possible, to every clause and word of a statute.'" (citations omitted)); *Mountain States Tel. & Tel. Co. v. Pueblo of Santa Ana*, 472 U.S. 237, 249 (1985) ("'[A] statute should be interpreted so as not to render one part inoperative.'" (citation omitted)).

It is this broad definition of the term "process" that was applied by the Federal Circuit in *State Street* and which was understood to be the definition governing that term in the statutory construction until the *Bilski* decision at issue here. The Federal Circuit's engrafting of new limitations on what constitutes patent-eligible processes in *Bilski* is contrary to the statute itself, to the congressional intent, and to this Court's precedent on the subject.

The only limitation on the definition of "process" that this Court mandates is that a process is not patent-eligible if it preempts "laws of nature, natural phenomena, [or] abstract ideas," in contrast to claiming a practical application thereof. *Diehr*, 450 U.S. at 185 (citing *inter alia Flook*, 437 U.S. at 589 and *Benson*, 409 U.S. at 67).

The Federal Circuit in *Bilski* did not address whether Congress in essence legislatively acquiesced to the *State Street* decision when it adopted the prior user rights for "methods of doing or conducting business" (*see* 35 U.S.C. §273) in response to that decision and has since considered, but did not adopt, any other changes to the patent-eligibility standard. While some of this Court's members have expressed doubt in the "useful, concrete and tangible results" test, the test stated was consistent with congressional intent (as the *State Street* decision was written by Judge Rich, another author of the Patent Act of 1952), and has support in this Court's precedent and §101, from which the test was derived.

In particular, Congress made clear, following the *State Street* and *AT&T* cases, that the patent law contemplates "a method of doing or conducting business" as a type of "method" that can be patent-eligible subject matter in adopting the earlier inventor infringement defense. *See* 35 U.S.C. §273(a)(3). Indeed, the legislative history for 35

U.S.C. §273 confirms that Congress contemplated the *State Street* case and acted accordingly:

- 145 CONG. REC. H6942 (daily ed. Aug. 3, 1999):

> Ms. LOFGREN ... In title II there is a first inventor defense that is limited to methods of doing or conducting business, and I need to understand why, what the impact of that would be and why it merits our support ....
> Mr. COBLE. Mr. Speaker, it is limited ... to the *State Street Bank* case.

- 145 CONG. REC. S14717 (daily ed. Nov. 17, 1999):

> As the Court [in *State Street*] noted, the reference to the business method exception had been improperly applied to a wide variety of processes, blurring the essential question of whether the invention produced a "useful, concrete, and tangible result."
>
> * * *
>
> In order to protect inventors and to encourage proper disclosure, this subtitle focuses on methods for doing and conducting business, including methods used in connection with internal commercial operations as well as those used in connection with the sale or transfer of useful end results–

> whether in the form of physical products, or in the form of services, or in the form of some other useful results; for example, results produced through the manipulation of data or other inputs to produce a useful result.

- H.R. REP. NO. 106-287, pt. 1, at 46-47 (1999):

> [T]he first inventor defense is of particular significance to [the financial services] industry, and the industry serves as a prime illustration of the need for the defense. The *State Street* decision has brought that industry abruptly to the forefront of cutting-edge patent law protection for subject matter that previously had been thought to be unpatentable. The *State Street* court came down on the side of a very broad scope of subject matter that qualifies for patent protection. *State Street* clarifies that the characterization of subject matter as a method of doing business does not render it unpatentable. One consequence is that the "back office" processes and methods that are fundamental to the delivery of many financial services, but transparent to the end user of the services, are now fair game for patent protection.

See also Pet. Open. Br. at 30-33.

Thus, at a minimum, the actions of Congress are contrary to the wholesale view that a patent-eligible process must be tied to a computer or some other machine, and evidence that §101 should not be as narrowly construed as advanced by the *Bilski* majority. *Cf. John R. Sand & Gravel Co. v. United States*, 552 U.S. 130, 128 S.Ct. 750, 756-57 (2008) (refusing to overturn the precedents because "*stare decisis* in respect to statutory interpretation has 'special force,' for 'Congress remains free to alter what we have done'"; "Congress has long acquiesced in the interpretation [the Court has] given" (citations omitted)); *Shepard v. United States*, 544 U.S. 13, 23 (2005) (explaining that there was not "sufficient justification for upsetting precedent here" since the issue was one of statutory interpretation, "and the claim to adhere to case law is generally powerful once a decision has settled statutory meaning. In this instance, time has enhanced even the usual precedential force, nearly 15 years having passed since [the precedent] came down, *without any action by Congress to modify the statute* ...." (citations omitted and emphasis added)); *Patterson v. McLean Credit Union*, 491 U.S. 164, 172-73 (1989) ("Considerations of *stare decisis* have special force in the area of statutory interpretation, for here ... the legislative power is implicated, and Congress remains free to alter what we have done.").

Indeed, Congress's failure to alter the scope of patent-eligible subject matter in light of *State Street*, despite having opportunities on multiple occasions to consider various proposals (*see, e.g.*, S. 2369, 110th Cong.; H.R. 1908, 110th Cong. §10; S. 861, 110th Cong. §303; H.R. 2365, 110th Cong.), is further probative of the legislature's intent on this subject.[4] *Cf. Bob Jones Univ. v. United States*, 461 U.S. 574, 600-01 (1983) (finding congressional acquiescence in the agency's statutory interpretation based on Congress' failure to act on no fewer than thirteen bills introduced to overturn the agency's interpretation during twelve years).

Additionally, in *Diehr*, this Court's latest binding pronouncement on this subject, this Court recognized principles consistent with the "useful, concrete and tangible results" test, which found its roots in hoary Supreme Court precedent. In addressing its concern over whether a process falls within one of the three enumerated exceptions to patent-eligible subject matter, *i.e.*, "laws of nature, natural phenomena, and abstract ideas" (*see Diehr*, 450 U.S. at 185), the Court recognized that a patent-eligible process should be any "act, or a series of acts" that produces "a beneficial result or effect," as defined by this Court in *Diehr*, 450 U.S. at 183-84 n.7 (quoting *Cochrane*, 94 U.S. at 787-788 and *Corning*, 56 U.S. at 267-68). Further, this Court went on to explain that it has long recognized that patent-eligible subject matter includes "one or more processes ... to produce a certain result or manufacture" and that "[i]t is for the discovery or invention of some practical method or means of producing a beneficial result or effect, that a patent is granted ...." *Diehr*, 450 U.S. at 184 n.7 (quoting *Corning*, 56 U.S. at 267-68).

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[4] In this regard, Senator Specter has already cautioned other branches of Government against impinging upon Congressional authority to regulate the appropriate scope of patent-eligible subject matter. *See, e.g.*, Letter from Arlen Specter, to Hon. Henry Paulson, Secretary of Treasury (Feb. 1, 2008) ("Specter Letter"), *available at* http://www.regulations.gov/fdmspublic/component/main?main=DocumentDetail&o=09000064803ba1a6 (cautioning the IRS against taking steps to regulate "tax strategy" patents because "the proposed regulations have been developed without consideration given to steps Congress is taking to address the issue").

In addition, the "useful" requirement of the "useful, concrete and tangible results" test set forth in *State Street* is consistent with §101 which states "[w]hoever invents or discovers any new and useful process ...." 35 U.S.C. §101. Similarly, the "concrete and tangible" requirement, *i.e.*, the converse to "abstract ideas," is consistent with this Court's mandate that a patent-eligible process cannot claim merely "laws of nature, natural phenomena, [or] abstract ideas." *See Diehr*, 450 U.S. at 185 (citing *inter alia Flook*, 437 U.S. at 589 and *Benson*, 409 U.S. at 67).

C. The *Bilski* Majority's Restriction on Patent-Eligible Transformations Is Contrary to The Rationale of this Court's Precedent

The *Bilski* majority's limitation on the types of transformations that can be patent-eligible processes (*cf.* 545 F.3d at 962-63) is also error and contrary to the rationale of this Court's precedent.

In particular, the rationale for the majority's blanket exclusion of "electronic signals and electronically-manipulated data" and "business methods," involving, for example, manipulation of "legal obligations, organizational relationships, and business risks"–today's "raw materials" of innovation–as patent-eligible subject matter unless tied to a computer or some other machine (*see Bilski*, 545 F.3d at 962) is contrary to the rationale used by this Court in developing the transformation prong of the "machine-or-transformation" test that the *Bilski* majority seeks to apply. *See Bradford*, 214 U.S. 383-86. While definiteness requirements (§112) may preclude claims directed to purely mental steps from being patent-eligible subject matter, the patent-eligibility test under §101 should not turn on what type of transformation occurs.

This Court addressed a similar issue a century ago in *Bradford*, when raw materials of a mechanical nature raised issues regarding the scope of patent-eligible subject matter which had previously been contemplated in the context of chemical processes.

In arguing against a narrow interpretation of patent-eligible processes, the Respondent explained:

> The doctrine that processes are not patentable unless they involve chemical reactions and elemental changes is unjust and contrary to the spirit of the Constitution and the intent of the patent laws.
>
> If it be conceded–and it cannot be logically denied–that an exercise of the inventive faculties can be involved in the discovery of a combination of

> functions, acts or operations, by which a new and useful result is obtained, then to deny the patentability of such inventions is to establish a ***false standard of patentability***, and to exclude a large class of meritorious inventors from the protection of the patent laws.

Bradford, 214 U.S. at 370 (Syllabus)(emphasis added)(citations omitted).

In response to this compelling argument, this Court held that it "did not intend to limit process patents to those showing chemical action or similar elemental changes" and that "an invention or discovery of a process or method involving mechanical operations, and producing a new and useful result, may be within the protection of the Federal statute, and entitle the inventor to a patent for his discovery." *Bradford*, 214 U.S. at 384-86.[5]

Similarly, patent-eligibility for today's building blocks, existing in the form of, for example, legal obligations and financial transactions, should not be foreclosed by rigid rules or "false standard of patentability" like those that this Court refused to adopt a century ago.

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[5] Indeed, a rule which categorically proscribes human-implemented methods from being patent-eligible subject matter is contrary to long standing Supreme Court precedent. For example, in reaching its decision in *Bradford*, this Court approvingly quoted *Walker on Patents* as hornbook law: "valid process patents may be granted for 'operations which consist entirely of mechanical transactions, ***but which may be performed by hand*** or by any of several different mechanisms or machines.'" *Id.* at 383 (citation omitted) (emphasis added).

Judge Newman's dissent below summarizes this point:

> The breadth of Section 101 and its predecessor provisions reflects the legislative intention to accommodate not only known fields of creativity, but also the unknown future. The [Supreme] Court has consistently refrained from imposing unwarranted restrictions on statutory eligibility, and for computer-implemented processes the Court has explicitly rejected the direction now taken. Nonetheless, [the majority] now adopts a redefinition of 'process' in Section 101 that excludes forms of information-based and software-implemented inventions arising from new technological capabilities, [erroneously] stating that this result is required by the [Supreme] Court's computer-related cases.

Bilski, 545 F.3d at 978 (Newman, J. dissenting).

The majority's limited view that transformations of legal obligations are somehow not patent-eligible is also contrary to over two centuries of patent practice at the USPTO. Indeed, long before *State Street*, or even *Diehr*, the USPTO issued countless patents directed to the so-called "liberal" arts of "law" (like insurance and contracts) and "marketing":

- U.S. Patent No. 871, "Bank Note" (issued Aug. 3, 1838) (directed to a process of "engraving, printing or any way expressing the sum in large letters, words or figures on the face of the note ....");
- U.S. Patent No. 1700, "Improvement in the Mathematical Operation of Drawing Lottery-Schemes" (issued July 18, 1840) (claim directed to a process of "making [lottery] tickets [using an algorithm], diminishing the number of tickets ... and regulating the drawing ....");
- U.S. Patent No. 389,818, "Complemental Accident Insurance Policy" (filed Jan. 19, 1888) (claims directed to a "complemental insurance policy");
- U.S. Reissue Patent No. RE11,270, "Means For Insuring Travelers Against Loss By Accident" (filed July 21, 1892) (claims directed to a "means for insuring travelers and others against loss by accident");
- U.S. Patent No. 883,380, "Check" (filed Apr. 12, 1906) (claims directed to a "check having on each face a contract portion and a series of value designations");

- U.S. Patent No. 918,280, "Fractional-Insurance Policy" (filed Aug. 15, 1907) (claims directed to a "fractional insurance policy");
- U.S. Patent No. 1,045,331, "Cigar Container" (filed July 19, 1911) (claims directed to a "cigar container" that is described in the patent as being "especially useful in marketing cigars in original packages," col. 1, ll. 33-34);
- U.S. Patent No. 1,150,708, "Method of Marketing Trees" (filed Mar. 9, 1914) (claims directed to a "method of preparing and marketing trees");
- U.S. Patent No. 1,254,870, "Means Used In Accounting" (filed Sept. 9, 1916) (claims directed to a "triplicate invoice and receipt");
- U.S. Patent No. 1,419,739, "Marketing Bag" (filed June 17, 1920) (claim directed to an "open topped bag adapted for marketing").

The significance of these examples lies not in whether each individual patent was good or bad, but in demonstrating that the concept of "patent-eligible" subject matter has long recognized any "useful" invention, regardless of whether the use was in a "liberal" art (like law or marketing) or a "mechanical" or "chemical" art.

In particular, the USPTO previously explained in "A USPTO White Paper" entitled "Automated Financial or Management Data

Processing Methods (Business Methods)," the following:

> Financial apparatus and method patents date back to [the 1790s]. ... The first fifty years of the U.S. Patent Office saw the granting of forty-one financial patents in the arts of bank notes (2 patents), bills of credit (1), bills of exchange (1), check blanks (4); detecting and preventing counterfeiting (10), coin counting (1), interest calculation tables (5), and lotteries (17). Financial patents in the paper-based technologies have been granted continuously for over two-hundred years.

A USPTO White Paper, at 2 (ver. 1.43), *available at* www.uspto.gov/web/menu/busmethp/whitepaper.pdf.

The *Bilski* majority's new judicial carve-outs from the scope of patent-eligible subject matter should be rejected again by this Court.

D. This Court Should Clarify That a Computer-Implemented Invention Which Operates on a General-Purpose Computer Is Nonetheless Patent-Eligible as Long as It Does Not Preempt a Fundamental Principle

Benson held that the claimed method of converting a signal from "binary coded decimal" to "binary" in a general-purpose digital computer of any type was not patent-eligible subject matter. *Benson*, 409 U.S. at 64, 71-72. As the *Bilski* majority recognized, "the claimed process operated on a machine, a digital computer, but was still held to be ineligible subject matter." 545 F.3d at 955. Thus, the determinative factor concerning patent-eligibility was not whether the process was tied to a machine, as called for by the "machine-or transformation" test, but rather that a "fundamental principle [was] at issue." *Id.* The *Benson* Court found the claim objectionable because it sought to, in essence, preempt a fundamental principle for an entire field of use, as the *Bilski* majority explained. *See id.*

However, there has been much confusion generated over the "general-purpose computer" language used in *Benson* as compared to a so-called "special-purpose computer." *See Benson*, 409 U.S. at 65. For more than fifteen years, the law seemed to have been settled by *In re Alappat*, 33 F.3d 1526 (Fed.Cir. 1994) (en banc), where the Federal Circuit explained that "a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software." *Id.* at 1545. Yet, as Judge Newman explains in her dissent, the *Bilski* majority's holding again raises "uncertainty" in this area:

> [In the majority's opinion, w]e aren't told when, or if, software instructions implemented on a general purpose computer are deemed "tied" to a "particular machine," for if *Alappat's*

> guidance that software converts a general purpose computer into a special purpose machine remains applicable, there is no need for the present ruling. For the thousands of inventors who obtained patents under the court's now-discarded criteria, their property rights are now vulnerable.

Bilski, 545 F.3d at 994-95 (Newman, J., dissenting).

This uncertainty has been further exacerbated by the BPAI, which has drawn nonsensical distinctions between general-purpose computers and specific-purpose computers:

- *Ex parte Gutta*, No. 2008-3000, slip op. at 5-6 (BPAI Jan. 15, 2009) (rejecting under §101 a claim reciting a "computerized method performed by a data processor");

- *Ex parte Nawathe*, No. 2007-3360, 2009 WL 327520, at *4 (BPAI Feb. 9, 2009) (rejecting under §101 a claim reciting a "computerized method" of inputting and representing XML documents as insufficiently tied to "a particular computer specifically programmed for executing the steps of the claimed method");

- *Ex parte Cornea-Hasegan*, No. 2008-4742, slip op. at 9-10 (BPAI Jan. 13, 2009) (rejecting under §101 a claimed method for predicting results of mathematical operations, finding that "[t]he recitation of a 'processor'

> performing various functions is nothing more than a general purpose computer that has been programmed in an unspecified manner to implement the functional steps recited in the claims").

This confusion has been further compounded with district court decisions that have used this non-sensical reasoning as a basis to declare computer implemented claims which can operate on any computer, but must perform specific delineated steps, as being patent-ineligible. *E.g., DealerTrack, Inc. v. Huber*, No. CV 06-2335, 2009 U.S. Dist. LEXIS 58125, at *12-13 (C.D.Cal. July 7, 2009) (finding the patent invalid under *Bilski* based on the court's findings that the patent did "not specify precisely how the computer hardware and database [were] 'specially programmed,' and the claimed central processor [was] nothing more than a general purpose computer that has been programmed in some unspecified manner," which "[u]nder *Bilski* and the recent decisions interpreting it [could not] constitute a 'particular machine'"); *Cybersource Corp. v. Retail Decisions, Inc.*, No. C 04-03268, 2009 U.S. Dist. LEXIS 26056, at *20-21 (N.D.Cal. Mar. 26, 2009).

Such confusion and "uncertainty" would be eliminated, however, if the inquiry for patent-eligibility was appropriately focused on whether the claimed subject matter falls within one of the four statutory classes and whether it preempts a fundamental principle.

In today's world, where virtually every special-purpose software is written to run on general-purpose computers as we as a society desire, this confusing distinction should be rejected once and for all by this Court.

III. BUSINESS- AND COMPUTER-RELATED PATENTS ARE AN IMPORTANT AND VALUABLE PART OF OUR ECONOMY AND PROMOTE THE PROGRESS OF THE USEFUL ARTS

Patents play an important role in promoting the "progress" of the "useful Arts" and stimulating innovation, and a patent system can promote such progress in a variety of ways.

First, as this Court has recognized, it can promote progress by rewarding innovation with patent rights. *See, e.g., Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 730-31 (2002) ("The patent laws 'promote the Progress of Science and useful Arts' by rewarding innovation with a temporary monopoly." (quoting U.S. Const. art. I, §8, cl. 8)); *Chakrabarty*, 447 U.S. at 307 (explaining that "[t]he Constitution grants Congress broad power to legislate to 'promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.' Art. I, § 8, cl. 8" and that "[t]he patent laws promote this progress by offering inventors exclusive rights for a limited period as an incentive for their inventiveness and research efforts").

President Lincoln described the development of a patent system as one of the three most important developments in the world's history "on account of [its] great efficiency in facilitating all other inventions and discoveries," and explained:

> Next came the patent laws. These began in England in 1624, and in this country with the adoption of our Constitution. Before then any man [*might*] instantly use what another man had invented, so that the inventor had no special advantage from his invention. The patent system changed this, secured to the inventor for a limited time exclusive use of his inventions, and thereby added the fuel of interest to the fire of genius in the discovery and production of new and useful things.

Abraham Lincoln, *Lecture on "Discoveries, Inventions and Improvements,"* delivered before the Library Association of Springfield, Illinois, Feb. 22, 1860, *reprinted in* 5 LIFE AND WORKS OF ABRAHAM LINCOLN, *Speeches and Presidential Addresses, 1859–1865* 13 (Marion Mills Miller ed., centenary ed.) (1907).[6]

But this is not the only way patent systems "promote progress." Public disclosure in patents is another important way that progress is promoted.[7] Shortly after the 1952 Act was passed, Judge Rich presented a series of lectures on the then-new Act, which provides useful insight into the varying purposes of patent laws. With respect to the role our patent laws serve regarding "incremental inventions" and "becom[ing] part of the technical literature," Judge Rich stated:

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[6] Besides being the sixteenth president of the United States, Mr. Lincoln was the inventor on U.S. Patent No. 6,469, entitled "Buoying Vessels Over Shoals," (filed Mar. 10, 1849).

> In the remote corners of the most crowded arts, progress is made by the proliferation of ideas, different and unobvious ways of doing the same thing, so that the reservoir of inventions fills up. It should never be forgotten that *patented* inventions are published and become a part of the technical literature. This publication itself promotes progress in the useful arts and it is the prospect of patent rights which ***induces the disclosure*** and the issuance of the patent which makes it available.

Giles S. Rich, *The Principles of Patentability*, 42 J. Pat. Off. Soc'y 75, 83 (1960) (emphasis added).

These words of wisdom from almost half a century ago ring particularly true when it comes to software and financial service-related inventions. Prior to *State Street* and the "great flood" of

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[7] As Senator Specter has recently explained:

> U.S. patent policy has historically sought to balance the goal of encouraging innovation with the need for public disclosure.

Specter Letter, *supra* note 4, at 1.

"business method" patents, there was a dearth of prior art available as to computer software and financial service innovations.[8]

It is perhaps ironic that the greatest complaint levied against these types of patents is that so many applications–disclosing the previously withheld secrets of these industries–are being submitted to the USPTO, and are becoming part of our public literature. Thus, the greatest complaint against these types of patents is perhaps the greatest justification for them.

One industry participant aptly explained how in the financial service industry the need for patent protection of financial service products and the resulting benefits of transparency have evolved out of *State Street* and its progeny:

> Two additional factors seemed to conspire further to drive financial service firms to the patent office –

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[8] Congress addressed this void with the prior user right of §273 for patents which cover "a method of doing or conducting business," because prior to that time these industries did not disclose what they did and how they did it. *See* Julie E. Cohen & Mark A. Lemley, *Patent Scope and Innovation in the Software Industry*, 89 Cal. L. Rev. 1, 13 (2001) ("prior art in this particular industry may simply be difficult or, in some cases, impossible to find because of the nature of the software business"; "Unlike inventions in more established engineering fields, most software inventions are not described in published journals. Software innovations exist in the source code of commercial products and services that are available to customers. This source code is hard to catalog or search for ideas.").

adoption of internet-based technologies to interact with clients and new regulations demanding financial, tax and accounting transparency. While the internet transformed many companies and even entire industries, few industries felt the effects more dramatically than financial services. Aside from effectively replacing the telephone, the internet fundamentally transformed the back office as well. Far from just a matter of automation, firms took pains to think through their entire value chains and re-engineer how they did business with their clients. Entire new processes and systems were being invented at a break-neck pace and the effects on the industry and the economy were breathtaking .... ***Of course, virtually inherent with the rise of the internet, there was a concomitant loss of the ability to effectively maintain trade-secrets protection, and therefore, less of an ability to retain proprietary rights in all the inventive activity the internet became unleashed.***

Second, particularly in the area of new financial products, transparency ***became essential*** as a result of U.S. Treasury and IRS regulations designed to combat a growing problem with corporate tax shelters. Under the regulations, any financial structure offered having U.S. tax consequences

> was subject to being registered as a corporate tax shelter if the client or potential client was bound to confidence regarding the structure. Accordingly, ***confidentiality agreements were regarded as a regulatory kiss-of-death*** for such offerings and ***trade secret protection as a predominant form of intellectual property protection disappeared virtually overnight***. Thus, a regulatory push for transparency coupled with an internet-fueled pull for process re-engineering dictated the solution – have it both ways – that is, ***keep rights proprietary and at the same time embrace transparency: seek a patent.***

John A. Squires and Thomas S. Biemer, *Patent Law 101: Does A Grudging Lundgren Panel Decision Mean That The USPTO Is Finally Getting The Statutory Subject Matter Question Right?,* 46 IDEA 561, 565 (2006) (emphasis added).

Others in the financial service industry have also emphasized the importance of patents to the industry in a submission in response to a proposed IRS Regulation that would discourage so-called "tax strategy" patents as follows:

> Beginning in the late 1990's, patent issues became of increasing importance in the financial services industry primarily as a result of information technology advances,

> deployment of those technologies by SIFMA [Securities Industry and Financial Markets Association] members and new legal precedent confirming an expansive U.S. patent regime. ***From the outset, SIFMA and its predecessor organizations have been active voices in advocating for a patent system that achieves and maintains a balance between the rights of patent holders and the public's right to access fundamental structures, and that promotes interoperability between the complex technologies comprising much of the financial services industry and financial market infrastructure.***

Letter from Patti McClanahan, Managing Director, SIFMA, to IRS (Jan. 31, 2008), *available at* http://www.regulations.gov/fdmspublic/component/main?main=DocumentDetail&o=09000064803a89dd (emphasis added).

The role of patents related to financial transactions, e-commerce and internet related activities in the economy is important. Such patents, when deserved, should be awarded to encourage innovation, transparency, and add to the public warehouse of knowledge.

CONCLUSION

While the *Bilski* majority did restate much of the relevant law on patent-eligible subject matter correctly, *Amici Curiae* respectfully submit that the majority deviates from this Court's precedent and Congress's mandate as discussed herein. The appropriate analysis for determining patent-eligibility of processes should not be limited to applications that are either tied to a computer or other machine or require a strict physical transformation. A process under §101 is "an act or series of acts" which does not preempt a "fundamental principle." This Court should reject any effort to create a rigid short-hand analysis or other "governing" test.

Respectfully submitted,

Charles R. Macedo
Counsel of Record
Anthony F. Lo Cicero
Norajean McCaffrey
AMSTER, ROTHSTEIN &
EBENSTEIN LLP
90 Park Avenue
New York, NY 10016
(212) 336-8000
Counsel for Amici Curiae

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APPENDIX A

DESCRIPTION OF *AMICI CURIAE*

The various *amici curiae* sponsoring this submission ("*Amici Curiae*") reflect mid-sized and smaller members of the financial service, e-commerce, and computer-related industries. While *Amici Curiae* do not advocate that the claims at issue are entitled to be patented, as reflected by the present submission, each of these *Amici Curiae* believe it is important to maintain a strong patent system that allows for all types of innovations that do not pre-empt a fundamental principle to remain patent-eligible subject matter.

Double Rock Corporation is an industry leader in providing cash management services and technology solutions to the banking, broker-dealer, qualified plan and retail markets. The principals of Double Rock developed an innovative product known as "insured deposits," which provides financial institutions, including broker dealers and asset managers, with the ability to offer customers FDIC-insured, interest bearing demand accounts, with unlimited checking. Over the past decade, Double Rock has developed many improvements for systems and methods used to implement these and other financial service products. These and other financial products are offered by its affiliates, LIDs Capital LLC, Intrasweep LLC and Access Control Advantage, Inc. Double Rock's subsidiary, Island Intellectual Property LLC, owns and manages Double Rock's patent portfolio for its insured deposit products. Without the promise of patent protection, it would be difficult for Double Rock, as a relatively smaller player in the financial service industry, to invest in these innovative products.

eComp Consultants is an intellectual property consulting and litigation support firm providing professional services in the areas of internet, telecommunications, and information technology. eComp Consultants consists of a collaborative staff of senior industry experts and executives to provide technology research, expert reports, deposition, trial testimony. eComp Consultants specializes in advising attorneys and their clients on the technical aspects of patent infringement and portfolio valuation. eComp Consultants has a vested interest protecting the value of intellectual property and ensuring that patent law is forward looking and promoting innovation in all areas.

Pipeline Trading Systems LLC operates the Pipeline Alternative Trading System (ATS) that enables institutions and brokerage firms to quickly and efficiently trade blocks of NYSE-listed companies, NASDAQ stocks, ADRs, and Exchange Traded Funds. Pipeline's block execution system increases control, saves time and empowers the institutional trader to achieve unmatched execution performance on large orders. The Algorithm Switching Engine™ revolutionizes access to dark and displayed liquidity, predicting on a minute-by-minute basis the best algorithm to implement the trader's instructions. Its patent-pending predictive technology minimizes market impact while accessing significant sources of liquidity.

Rearden Capital Corporation is an investment company in a wide range of innovative technology. The principal of Rearden is an inventor on multiple issued patents and pending applications in a wide variety of subject matters ranging from systems and method for e-commerce, to renewable energy systems, communication devices, among other technologies. Rearden has a strong belief that the patent system equalizes the small inventors and allows them an opportunity to contribute to the storehouse of human knowledge with less resources.

Craig Mowry is an independent inventor and filmmaker living in New York. Mr. Mowry has developed a wide range of inventions that are the subject of many pending patent applications and issued patents. His inventions for interactive communication are revolutionary systems and methods which will improve the avenues for connecting internet users with relevant information and people of interest. These innovations will also allow the individual to participate in the visuals and programming seen by other people, around the world. His unique technology and methods for building these bridges through multi-media platforms rely on patent protection in funding and enabling their creation and ongoing improvement.

PCT Capital, LLC, is an advisory and asset management firm focused on an emerging intellectual property (IP). PCT Capital recognizes that in the last 30 years, there has been a shift from a labor-driven economy to a knowledge-based economy and that intangible assets such as IP have overtaken traditional capital assets such as real property, plant and equipment. As a result, PCT Capital's IP advisory team provides services to help companies (directly or via venture, private equity, buy-out and turn-around funds who invest in them) create, acquire, manage, dispose and monetize IP assets.

AMICUS
CURIAE
BRIEF

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No. 08-964

IN THE

Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,

Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,

Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF *AMICUS CURIAE* EAGLE FORUM EDUCATION & LEGAL DEFENSE IN SUPPORT OF PETITIONERS

ANDREW L. SCHLAFLY
939 OLD CHESTER ROAD
FAR HILLS, NJ 07931
(908) 719-8608

Counsel for Amicus

WILSON-EPES PRINTING CO., INC. – (202) 789-0096 – WASHINGTON, D. C. 20002

TC4TA
OOS 4XIVNQ

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QUESTIONS PRESENTED

Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

Whether the Federal Circuit's "machine-or-transformation" test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business," 35 U.S.C. § 273.

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INTEREST OF *AMICUS CURIAE*[1]

Eagle Forum Education and Legal Defense Fund ("EFELDF"), a nonprofit organization founded in 1981, is a pro-family group that has long advocated fidelity to the text of the U.S. Constitution. EFELDF has a longstanding interest in defending rights of inventors and private property in general, and has previously filed amicus briefs in federal courts on the issue of intellectual property. The mission of EFELDF includes defending the Patent Clause and the intellectual property rights of individual inventors, which are so crucial to American prosperity.

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[1] This brief is filed with the written consent of all parties. Pursuant to its Rule 37.6, counsel for *amicus curiae* authored this brief in whole, and no counsel for a party authored this brief in whole or in part, nor did any person or entity, other than *amicus*, its members, or its counsel make a monetary contribution to the preparation or submission of this brief.

SUMMARY OF ARGUMENT

The Patent Clause is one of the most important provisions in the entire Constitution due to its central and essential role in promoting American ingenuity and prosperity. Though the Patent Clause receives scant historical attention – merely one paragraph addresses it in *The Federalist* No. 43 – this unique American constitutional right has motivated the vast majority of the world's greatest inventions. From Thomas Edison to Alexander Graham Bell to many of today's greatest inventions, the Patent Clause has played an instrumental role in encouraging and protecting the individual's right to the fruits of his creative efforts. It must continue to do so no less in this Information Age.

The decision below usurps the legislative role and adds complexities to patent law that are neither welcome nor justified in the 21st century. If the invention at bar "promote[s] the Progress of Science and useful Arts," U.S. Const. Art. I, Sect. 8, Cl. 8, and if it satisfies the legislative requirements pursuant to that provision, then it is patentable subject matter. By adhering to the anachronistic "machine-or-transformation" test, which can be found in neither the Patent Clause nor its implementing statute, the court below improperly eviscerated much of the value of the patent system for the future. The incentives-based and natural rights-based approaches to intellectual property, which have always been the hallmark of the American patent system, should not be encumbered by outdated categorical exclusions based on machines and transformations.

The claim at bar is for a method of hedging commodities risk. Suppliers of goods would like to hedge their risk against a market drop in price; consumers of goods (such as manufacturers) would like to hedge their risk against a market increase in price. The patent claim describes use of an intermediary, called the "commodity provider," which would buy and sell at fixed prices as sought by the ultimate suppliers and consumers. The patent claim also extends beyond that to encompass the trading of options.

The patent examiner rejected these claims (1-11) under 35 U.S.C. § 101 because "the invention is not implemented on a specific apparatus and merely manipulates [an] abstract idea and solves a purely mathematical problem without any limitation to a practical application, therefore, the invention is not directed to the technological arts." *In re Bilski*, 545 F.3d 943, 950 (Fed. Cir. 2008). The Patent Board affirmed on different grounds, holding that transformation of "non-physical financial risks and legal liabilities of the commodity provider, the consumer, and the market participants" is not patentable subject matter. *Id.* (quotations omitted). The Board also noted that Applicants' claimed process did not produce a "useful, concrete and tangible result," and thus was not patentable subject matter. *Id.* (quotations omitted). The Federal Circuit affirmed, but on the grounds that the patent claim did not satisfy the "machine-or-transformation" test.

But Congress has not categorically excluded from patentability inventions that fail a "machine-or-transformation" test, and it was error for the lower court to impose that limitation. If an invention is obvious and thereby fails the "non-obvious" test, then a patent application for such invention may be rejected. Similarly, if an invention is outside the constitutional scope of the "Progress of Science and useful Arts," then Congress itself may not secure its protection under the Patent Clause. But the Federal Circuit erred in not deciding the patentability of the invention on either of those grounds, and instead grafting complex and unjustified requirements such as and especially the "machine-or-transformation" test. This test is unsuitable for the 21st century, it is inconsistent with the enormously successful incentives-based approach taken by the Framers, and it is contrary to a textualist interpretation of the applicable legislation and of the Patent Clause itself.

The separate dissents below by Judges Newman and Rader set valuable guideposts for reversal of the errant majority decision. Judge Newman correctly observed:

> The court thus excludes many of the kinds of inventions that apply today's electronic and photonic technologies, as well as other processes that handle data and information in novel ways. Such processes have long been patent eligible, and contribute to the vigor and variety of today's Information Age. This exclusion of process inventions is contrary to statute, contrary to precedent, and a negation of the constitutional mandate. Its impact on the future, as well as on the thousands of patents already granted, is unknown.

In re Bilski, 545 F.3d at 976 (Newman, J., dissenting).

Judge Rader aptly dissented on the grounds that the lower court had "ventured away from the statute":

> [A]s innovators seek the path to the next techno-revolution, this court ties our patent system to dicta from an industrial age decades removed from the bleeding edge. A direct reading of the Supreme Court's principles and cases on patent eligibility would yield the one-sentence resolution suggested above. Because this court, however, links patent eligibility to the age of iron and steel at a time of subatomic particles and terabytes, I must respectfully dissent.

Id. at 1011 (Rader, J., dissenting). Judge Rader observed that "this court today invents several circuitous and unnecessary tests" and that other "statutory conditions and requirements better serve the function of screening out unpatentable inventions than some vague 'transformation' or 'proper machine link' test." *Id.* at 1015.

The applicable statute never mentions "transformations" and the decision below usurps the legislative role to impose the "machine-or-transformation" threshold test on patentability. Many valuable inventions that could propel the American economy will be lost if the judicial activism below is not reversed and the full rights of the individual inventor are not restored. This Court should then remand this case for a determination of whether the Bilski process is patentable under the statutory criteria set forth by Congress, not under a judicial test unsupported by precedent and without basis in the statute or the Patent Clause itself.

ARGUMENT

Three points are essential to deciding this appeal. First, continued vitality in the patent system for small inventors is essential to continued American prosperity. Second, a categorical exclusion from patentability of subject matter that lacks a "machine or transformation" is unjustified and ill-suited to inventions in the Information Age. Third, the much-lamented flaws in the current patent system are due to a lack of enforcement of other statutory requirements, such as the non-obviousness test. A judicial redefinition of the patent process is neither needed nor appropriate.

Categorical exclusion of patentable subject matter from 35 U.S.C. § 101 is misguided. As explained further below, *Amicus* EFELDF urges this Court to reexamine and adopt the reasoning set forth by Justice Potter Stewart in his dissent in ***Parker v. Flook***:

> [I]t strikes what seems to me an equally damaging blow at basic principles of patent law by importing into its inquiry under 35 U. S. C. § 101 the criteria of novelty and inventiveness. Section 101 is concerned only with subject-matter patentability. Whether a patent will actually *issue* depends upon the criteria of §§ 102 and 103, which include novelty and inventiveness, among many others. It may well be that under the criteria of §§ 102 and 103 no patent should issue on the process claimed in this case, because of anticipation, abandonment, obviousness, or for some other reason. But

> in my view the claimed process clearly meets the standards of subject-matter patentability of § 101.

437 U.S. 584, 600 (1978) (Stewart, J., dissenting).

I. THE FEDERAL CIRCUIT ERRED IN HOLDING THAT A PROCESS MUST ALWAYS BE TIED TO A PARTICULAR MACHINE OR APPARATUS TO BE PATENTABLE

The central error in the decision below was its categorical denial of the patent application based on the "machine-or-transformation test," which the Court described as follows:

> The machine-or-transformation test is a two-branched inquiry; an applicant may show that a process claim satisfies § 101 either by showing that his claim is tied to a particular machine, or by showing that his claim transforms an article. *See Benson*, 409 U.S. at 70. Certain considerations are applicable to analysis under either branch. First, as illustrated by *Benson* and discussed below, the use of a specific machine or transformation of an article must impose meaningful limits on the claim's scope to impart patent-eligibility. *See Benson*, 409 U.S. at 71-72. Second, the involvement of the machine or transformation in the claimed process must not merely be insignificant extra-solution activity. *See Flook*, 437 U.S. at 590.

In re Bilski, 545 F.3d 943, 963 (Fed. Cir. 2008) (emphasis added).

The decision below held as a threshold matter that "the operative question ... is whether Applicants' claim 1 satisfies the transformation branch of the machine-or-transformation test." The Court held that it does not:

> We hold that the Applicants' process as claimed does not transform any article to a different state or thing. Purported transformations or manipulations simply of public or private legal obligations or relationships, business risks, or other such abstractions cannot meet the test because they are not physical objects or substances, and they are not representative of physical objects or substances. Applicants' process at most incorporates only such ineligible transformations. ... [C]laim 1 does not involve the transformation of any physical object or substance, or an electronic signal representative of any physical object or substance. **Given its admitted failure to meet the machine implementation part of the test as well, the claim entirely fails the machine-or-transformation test and is not drawn to patent-eligible subject matter.**

Id. at 963 (emphasis added).

This categorical exclusion from patentability unwisely and unjustifiably excludes desirable innovations from the protection of patent law. For example, Samuel Morse obtained a patent for the following claim for his Morse Code:

> Fifth, I claim, as my invention, the system of signs, consisting of dots and spaces, and of dots, spaces, and horizontal lines, for numerals, letters,

words or sentences, substantially as herein set forth and illustrated, for telegraphic purposes.

O'Reilly v. Morse, 56 U.S. 62, 1853 U.S. LEXIS 273, *49 (1854). It seems doubtful that this claim would survive the machine-or-transformation test imposed by the decision below. Part of the enormous value of Morse Code is that it is machine *independent.*

Many great inventions of the Information Age are valuable precisely ***because of their machine independence***, such as the UNIX operating system[2] and the "MP3" music player format.[3] The essence of the real breakthrough of these inventions is their independence of particular machines. Copyright law protects the software program code itself, but the true invention (what the code does) is not adequately protected by copyrights on the code.

It is unwise and unjustified to categorically exclude from patentability anything and everything that is decoupled from a physical process. For the UNIX operating system, the invention's value was the lack of a link to a specific computer machine and the fact that it is not hooked to any particular (physical) hardware. The decision below will not properly incentivize future inventions like UNIX, and even more abstract yet extremely valuable and desirable ones, if the anachronistic "machine-or-transformation" test is affirmed here. Patent law should not be limited by arbitrary physicality, but should be able to look more to the utility of the novel work.

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[2] *See http://pdos.csail.mit.edu/6.828/2008/readings/ritchie79evolution.html* (describing the history of the development of UNIX, including some of its marvelous innovations).

[3] For a history of MP3 and its innovative value, see http://www.websters-online-dictionary.org/definition/MPEG+AUDIO+LAYER+3.

This machine-or-transformation test imposed below also creates more questions than it answers. It leaves unclear what link to a machine is adequate, an issue of particular importance for the vast number of computer-related inventions. As pointed out by Judge Rader in dissent:

> What link to a machine is sufficient to invoke the "or machine" prong? Are the "specific" machines of *Benson* required, or can a general purpose computer qualify? What constitutes "extra-solution activity?" If a process may meet eligibility muster as a "machine," why does the Act "require" a machine link for a "process" to show eligibility? Does the rule against redundancy itself suggest an inadequacy in this complex spider web of tests supposedly "required" by the language of section 101?

In re Bilski, 545 F.3d at 1015 (Rader, J., dissenting).

This lower court's "machine-or-transformation" requirement is harmful in several ways. It will suppress and discourage invention – and thereby prosperity – in a way that the Constitution does not support and that Congress has not authorized. This unjustified requirement is also difficult to implement and enforce. As Judge Rader noted in dissent below, this test strays from a straightforward, textualist reading of the applicable statute, and instead reads a whole new test into the statute that was never intended.

II. THE UNDERLYING FLAW IN THE CURRENT PATENT PROCESS IS LACK OF ENFORCEMENT OF OTHER STATUTORY PROVISIONS, WHICH HURTS INNOVATION

As Justice Potter Stewart wrote in his dissent in *Parker v. Flook*, "[w]hether a patent will actually *issue* depends upon the criteria of §§ 102 and 103, which include novelty and inventiveness, among many others." 437 U.S. 584, 600 (1978) (Stewart, J., dissenting). It is a lack of enforcement of the novelty and inventiveness requirements that causes the underlying flaws in the current patent process.

Copyright law, by analogy, has successfully adhered to its originality requirement to help keep out non-meritorious claims. This Court held without dissent that "[o]riginality is a constitutional requirement." *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 346 (1991). "The originality requirement articulated in *The Trade-Mark Cases* and *Burrow-Giles* remains the touchstone of copyright protection today. It is the very premise of copyright law." *Id.* at 347 (quotations and citations omitted).

Similarly, the better approach to curb abuses in patent law is to strengthen the requirement of originality rather than erect complex, non-statutory obstacles to patentability. As Judge Newman explained in his dissent, the lower court's "exclusion is imposed at the threshold, before it is determined whether the excluded process is new, non-obvious, enabled, described, particularly claimed, etc.; that is, before the new process is examined for patentability." *In re Bilski,* 545 F.3d at 976 (Newman, J., dissenting).

Other "statutory conditions and requirements better serve the function of screening out unpatentable inventions than some vague 'transformation' or 'proper machine link' test." *Id.* at 1015 (Rader, J., dissenting).

This Court should affirm the approach taken by Judge Rader below:

> If this court would follow that Supreme Court rule, it would afford broad patent protection to new and useful inventions that fall within the enumerated categories and satisfy the other conditions of patentability. **That is, after all, precisely what the statute says.**

In re Bilski, 545 F.3d at 1011-12 (Rader, J., dissenting) (emphasis added).

III. ROBUST PATENT LAW THAT PROTECTS SMALL INVENTORS IS ESSENTIAL TO CONTINUED AMERICAN PROSPERITY

"Patents provide an incentive to invest in and work in new directions," observed Judge Newman in dissent below. *In re Bilski,* 545 F.3d at 997 (Newman, J., dissenting). Those incentives are essential to continued American prosperity.

The Patent Clause and its statutory implementation inspired some of the greatest inventions in the history of mankind. Thomas Edison, properly recognized as the most influential person in the world during the entire second millennium by *Life* magazine, was motivated by the patent system to obtain 1,093 patents in the United States. The patent system provided enormous incentives for Edison for his ingenuity, and as a result the entire world reaped prodigious rewards. Without the full and robust protections of patent law, ingenuity by the small inventor is diminished and the American economy suffers from a lack of incentives for valuable inventions.

The anachronistic "machine-or-transformation" test forecloses the future Thomas Edisons of the Information Age. A marvelous new invention that fails the "machine-or-transformation" test may still be something that we want to encourage. The "machine-or-transformation" is simply too rigid to adapt to changing times. The future equivalent of the light bulb or power station might well be intangible and thereby fail the overly-restrictive "machine-or-transformation" test.

As in the analogous field of copyright law, "It is generally for Congress, not the courts, to decide how best to pursue the Copyright Clause's objectives." *Eldred v. Ashcroft*, 537 U.S. 186, 212 (2003). This aphorism applies with even greater force to the Patent Clause. Patents play an even more vital role in protecting and encouraging ingenuity and productivity. The wooden "machine-or-transformation" test imposed below will inevitably stifle inventions and innovation. Courts should not meddle with the important incentives for invention created by Congress based on the Patent Clause.

As Justice Burton, joined by Chief Justice Vinson and Justice Frankfurter, observed over a half-century ago:

> the frontiers of science have expanded until civilization now depends largely upon discoveries on those frontiers to meet the infinite needs of the future. The United States, thus far, has taken a

> leading part in making those discoveries and in putting them to use.

United States v. Line Material Co., 333 U.S. 287, 332 (1948) (Burton, J., dissenting). Patentability should not be locked into the anachronisms of the past, and incentives for original inventions for the future must be fully preserved.

CONCLUSION

The decision below should be reversed.

Respectfully submitted,

ANDREW L. SCHLAFLY
939 OLD CHESTER ROAD
FAR HILLS, NJ 07931
(908) 719-8608

Counsel for Amicus

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AMICUS
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BRIEF

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Petitioners,

v.

DAVID J. KAPPOS, UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR, U.S. PATENT AND TRADEMARK OFFICE
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF ELEVEN LAW PROFESSORS AND AARP AS *AMICI CURIAE* IN SUPPORT OF RESPONDENT

BARBARA JONES
AARP FOUNDATION LITIGATION
200 South Robles
Suite 400
Pasadena, CA 91101
(626) 585-2628
Attorney for
Amicus Curiae AARP

JOSHUA D. SARNOFF
Counsel of Record for
Amici Curiae
Washington College of Law
American University
4801 Mass. Ave., NW
Washington, DC 20016
(202) 274-4165

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INTERESTS OF *AMICI CURIAE*

This brief is filed on behalf of the undersigned Law Professors identified in Appendix A and AARP.[1]

Law Professors teach and write about patents, intellectual property, health, science, and constitutional law. Law Professors are concerned that the Patent Act should be construed consistently with: (1) the constitutional premise that the patent system does not authorize private ownership of scientific principles, natural materials and abstract ideas; and (2) historic enforcement of that premise by requiring invention to exist in the application of any science, nature, and ideas.

AARP is a nonpartisan, nonprofit organization that helps people over the age of 50 to have independence, choice and control in ways that are beneficial to them and society as a whole. AARP has nearly 40 million members. AARP works to foster the health and economic security of individuals as they age, to ensure access to high quality and economical health care, and to ensure that older people have viable retirement options. AARP has previously filed briefs in this Court on the limits of what is patent eligible. In *Laboratory Corp. of America Holdings v. Metabolite Laboratories, Inc.*, No. 04-607, AARP described the adverse effects of patents for natural phenomena claimed as medical diagnostic methods. AARP has an interest in this case because of the trend to find "business methods" that are abstract ideas applied without any invention to be patent eligible. Such methods, including retirement plan methods, strategies and designs, limit the retirement options available to older people. Granting such patents also increases the cost of retirement plans and may lead to misconceptions that particular plans are government approved or legitimate. Upholding the patent eligibility of the claimed business method in this case would likely open the gates to patents on non-inventive applications of science and nature, which would adversely affect medical research and diagnostic and treatment options. Patent incentives are not needed for such discoveries or applications.

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[1] Letters of the Parties' general consent to file amicus briefs are on file with the Court. This brief was not authored in whole or in part by counsel for any party. No one other than *Amici* and their counsel made a monetary contribution to preparing or submitting this brief.

Science, nature, and ideas (claimed as such or without invention in their application) for centuries consistently have been held to be excluded from the patent system. Accordingly, the patent system generally has promoted scientific and technological development for human benefit. A broad interpretation of the Patent Act that would authorize the eligibility of non-inventive applications of science, nature, or ideas would extend the patent system beyond the limits that Congress has approved and would raise serious constitutional conflicts that should be avoided. It would also threaten continued scientific, technological, and other advances. *Amici* urge the Court to avoid this result.

SUMMARY OF THE ARGUMENT

The patent system of the United States, like that of other countries, excludes from its ambit scientific principles, natural materials, and abstract ideas. Since the 19th Century, this Court has distinguished patentable inventions from ineligible discoveries of science, nature, and ideas by determining whether there is any *invention in their application,* i.e., any creative, technological advance beyond merely applying the newly discovered or previously known science, nature, and ideas to a particular context. The "invention in the application" test of eligibility: performs a necessary gate-keeping role that is distinct from the patentability criteria of novelty, non-obviousness, and adequacy of disclosure; explains this Court's machine or transformation precedents and why particularity or tangibility is a necessary but not a sufficient condition for eligibility; and elucidates why the claims at issue here are ineligible. These claims are non-inventive applications of the abstract idea of hedging the risks of fixed-price, variable-volume purchases, limited only to the field of commodities.

Neither the Constitution nor the Patent Act authorizes patents for non-inventive applications of public domain science, nature, and ideas. The Constitution authorizes exclusive rights only for "Discoveries" of "Inventors," and the Patent Act has consistently been interpreted to preclude patents for scientific, natural, or conceptual discoveries, claimed as such or without invention in their application. The 1952 Act's definitional changes did not alter this requirement. Interpreting Section 101 (alone or with Section 273(b)) to authorize such claims would raise serious Constitutional conflicts that should be avoided. Such patents would not be for "Discoveries" of "Inventors," would extend beyond the "useful Arts" and would impede rather than "Promote the Progress" as they would propertize the building blocks of science, technology and other learning. Such patents are and should remain prohibited.

ARGUMENT

I. For a Claim Applying Science, Nature, or Ideas to Be Eligible, There Must Be Invention in the Application.

This case raises the most basic question of patent law: what kinds of discoveries or inventions can be protected by the patent system? The patent system does not exist to provide incentives for *all* forms of creative human endeavor. That its reach is limited avoids burdening the patent system with non-technological activities or discoveries, such as literary, artistic, and other non-functional expressions protected by copyright.[2] More significantly, the limits on the patent system avoid burdening society by propertizing fundamental knowledge and pre-existing natural materials. Thus, it is a common premise that patent systems may not authorize private ownership of ""[a] principle in the abstract," ... [p]henomena of nature, though just discovered, mental processes, and abstract intellectual concepts ... as they are the basic tools of scientific and technological work.'"[3]

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[2] *Cf. Baker v. Selden*, 101 U.S. (11 Otto) 99, 101-03 (1879) (discussing limits to the copyright system and its relation to the patent system).

Discoveries of phenomena of nature are unpatentable under two foundational premises: (1) they are not themselves the products of human invention, regardless of the investments and creative efforts leading to their identification; and (2) the patent system must not subject such discoveries to private property rights because they should be free for all humanity to share.[4] Discoveries of phenomena of nature thus are not "Discoveries" of "Inventors" within the Constitution's grant of authority.[5] Although abstract intellectual concepts may be human creations,[6] they are also outside the patent system. Such patents would restrict the public's right to benefit immediately from the discoverer's disclosure.[7] Therefore, all patent systems must distinguish claims to unpatentable discoveries of scientific principles, naturally occurring materials, and abstract ideas ("science, nature, and ideas") from claims to patent-eligible human inventions.[8] Line drawing to separate patentable inventions from unpatentable discoveries is necessary to protect the public domain.[9]

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[3] *Parker v. Flook*, 437 U.S. 584, 589, 591-92 (1978) (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972) (quoting *Le Roy v. Tatham*, 55 U.S. (14 How.) 156, 175 (1853))). *See, e.g.*, Convention on the Grant of European Patents ("EPC"), arts. 52(2)(a)&(c), Oct. 5, 1973 (as amended), 13 I.L.M. 268 ("discoveries, scientific theories and mathematical methods;" and "schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers" are not patentable inventions); Patent Law of the Peoples Republic of China, arts. 25(1)&(2), translation at http://www.sipo.gov.cn/sipo_English/laws/lawsregulations/200804/t20080416_380327.html; Patents Act, 1970 (India) (as amended), § 3(c), available at http://ipindia.nic.in/ipr/patent/patents.htm.

[4] *See, e.g., Diamond v. Diehr*, 450 U.S. 175, 185 (1981) ("'free to all men and reserved exclusively to none'") (quoting *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948)). *See generally* 17 The Parliamentary History of England col. 999 (William Cobbett ed., 1806-20) (1774) (Lord Camden) ("science and learning" are by nature "common to all mankind" and "ought to be as free and general as air or water.") ("Parliamentary History"); Edward C. Walterscheid, *The Early Evolution of the United States Patent Law: Antecedents* (pt. 3 continued), 77 J. Pat. & Trademark Off. Soc'y 847, 855 (1995) ("Walterscheid, Antecedents").

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[5] U.S. Const., art. I, § 8, cl. 8. *See, e.g., Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 476 (1974) (stating that "discovery is something less than invention"); Anthony W. Deller, *The United States patent system, in* Mainly on patents: The use of industrial property and its literature 50-52 (Felix Liebesny ed., 1972) (distinguishing "'mere discovery'" from invention) (quoting *Morton v. New York Eye Infirmary,* 17 F. Cas. 879, 882 (C.C.S.D.N.Y. 1862) (No. 9,865)); Edward C. Walterscheid, The Nature of the Intellectual Property Clause: A Study in Historical Perspective 350, 356 (William S. Hein & Co. 2002) (noting that the Framers appeared to view "Discoveries" and "Inventors" to be synonymous, and that under English common law patents "did not cover principles of nature") ("Walterscheid, Study"); *id.* at 365-66, 375-76 (arguing that "Discoveries" of "Inventors" are limited to the "useful arts," which excludes "anything not made or created by man"). *See also* Linda J. Demaine and Aaron Xavier Fellmeth, *Reinventing the Double Helix: A Novel and Nonobvious Reconceptualization of the Biotechnology Patent,* 55 Stan. L. Rev. 303, 370-74 (2002) (discussing historical evidence that patentable discoveries did not include "merely something found").

[6] Because all patent claims are intellectual concepts expressed in language having physical embodiments, they could be viewed as "abstract ideas." *See, e.g., Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 386 (1996); Walterscheid, Antecedents, *supra,* at 849 (describing how disclosure of the concept of the invention became the consideration for the patent grant). This raises a level of generality problem regarding which human-created ideas are the fundamental tools for further innovation that must be in the public domain upon their disclosure. In contrast, all discoveries of science and nature must be so treated.

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[7] *See, e.g.*, 1 William C. Robinson, The Law of Patents for Useful Inventions 37-44 (Little, Brown 1890). *See also id.* at 44 ("methods of agriculture and commerce, the metaphysical and moral truths, and all other inventions which do not relate to the industrial arts, belong at once, upon their publication, to all mankind").

[8] In foreign systems, such line drawing may occur in legislative or judicial definitions of "invention," in requirements for "technical effect" in claimed applications of science, nature, or ideas, or in requirements for "industrial applicability." *See, e.g.*, Patent Act (Japan), art. 2(1), translation at http://www.cas.go.jp/jp/seisaku/hourei/data/PA.pdf; European Patent Office, *Revision of the European Patent Convention (EPC 2000) Synoptic Presentation of EPC 1973/2000 – Part I: The Articles*, EPO Official J. 48 (Spec. Ed. 4 2007), available at http://archive.epo.org/epo/pubs/oj007/08_07/special_edition_4_epc_2000_synoptic.pdf; Patent Cooperation Treaty, art. 33(4), June 19, 1970 (as amended), 28 U.S.T. 7645. *See generally* Stefan A. Riesenfeld, *The New United States Patent Act in the Light of Comparative Law I*, 102 U. Penn. L. Rev. 291, 302 (1954).

[9] Similar concerns animate the copyright doctrine of merger, which precludes protection for an author's expression if it "would effectively accord protection to the idea itself," because "ideas are too important to the advancement of knowledge to permit them to be under private ownership." *CCC Info. Servs., Inc. v. Maclean Hunter Market Repts., Inc.*, 44 F.3d 61, 69 (2d

In the United States, this Court has drawn a consistent line when interpreting the statutory categories of patentable subject matter.[10] The Court has required *invention* to exist *in the application* of any previously known or newly discovered science, nature, or ideas.[11] "'If there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end.'"[12] Moreover, the invention (i.e., the creative, technological advance[13]) must reside *in the application*, rather than in a discovery preceding or employed by it.[14] This is because the science, nature, or ideas

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Cir. 1994); *Kregos v. Associated Press*, 937 F.2d 700, 705 (2d Cir. 1991). *See Baker*, 101 U.S. (11 Otto) at 103.

[10] *See* 35 U.S.C. § 101 ("any ... process, machine, manufacture, or composition of matter").

[11] "Application" here refers not to the document submitted, but to the implementation made of science, nature, and ideas, e.g., improving steam engines employing thermodynamic principles. *See Boulton v. Bull*, 126 Eng. Rep. 651, 652-53 (1795)

[12] *Diehr*, 450 U.S. at 188 n.11 (quoting *Funk Bros. Seed Co.*, 333 U.S. at 130).

[13] *See, e.g.*, 1 Robinson, *supra*, at 93-94 (surveying legal efforts to define "invention").

[14] *See, e.g.*, *Mackay Radio & Tel. Co. v. Radio Corp. of Am.*, 306 U.S. 86, 94 (1939) ("We assume, without deciding the point, that this advance was *invention* even though it was achieved by the logical application of a known scientific law to a familiar type of antenna.") (emphasis added); *In re Alappat*, 33 F.3d 1526, 1553 (Fed. Cir. 1994) (en banc) (Archer, C.J., dissenting) ("The requirement of the patent law that an invention or discovery reside *in the application* of an abstract idea, law of

must be treated as if they are already in the prior art, i.e., are publicly known and free for all to use.[15] Absent invention in applying such discoveries, there is simply no invention to patent.

To emphasize this point, this Court in *Parker v. Flook* stated that "the discovery of such a phenomenon cannot support a patent unless there is some other *inventive* concept *in its application*."[16] There, the claimed process for catalytic conversion of hydrocarbons "contain[ed] no claim of patentable invention," because the only creative advance was an improved mathematical method of calculating a process variable, which had to be treated as if it were already known. The mere application of the new math in the context of the hydrocarbon process was not a technological invention (any more than would be using a new mathematical formula to calculate a useful measurement).[17] The need for another, and an *inventive*, concept in the claimed application of any scientific, natural, or conceptual discovery is critical, because the patent system does not exist to reward scientific, natural, or conceptual

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nature, principle, or natural phenomenon is embodied in the language of 35 U.S.C. § 101") (emphasis in original).

[15] *See, e.g., Diehr*, 450 U.S. at 185; *Flook*, 437 U.S. at 592 (citing *O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 115 (1853)).

[16] *Flook*, 439 U.S. at 594 (emphasis added).

[17] *See id.* at 594-95.

endeavors, but to create incentives for invention.[18] The Constitution and Section 101 thus bar the gate to non-inventive, piecemeal incursions on the public domain of science, nature, and ideas, even though the claimed applications may be new and do not foreclose other applications.

A. The Invention in the Application Test Performs a Necessary Gate-Keeping Role, Different from Novelty, Non-Obviousness, and Adequacy of Disclosure.

As this Court has held and should reiterate here, the invention in the application test of eligibility pertains to *all* product and process claims,[19] even though the literal language of Section 101 is broad.[20] Moreover, the test pertains even though the claimed application of science, nature, or ideas is wholly new under Section 102.[21] If novelty were all that was required for eligibility, this Court's precedents would have reached very different results.[22] Rather, the test pertains to newly created things and activities, whether or not the science, nature, or idea employed by the claimed invention was previously known.[23]

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[18] *See, e.g.,* Karl B. Lutz, *Patents and Science: A Clarification of the Patent Clause of the U.S. Constitution,* 32 J. Pat. Off. Soc'y 83, 87 (1950).

[19] *See. e.g., Diehr,* 450 U.S. at 188 n.11 (citing *Benson,* 409 U.S. at 68); *Flook,* 437 U.S. at 600 n.3 (Stewart, J., dissenting).

[20] *See, e.g., Flook,* 437 U.S. at 589 (*Benson* "foreclose[d] a purely literal reading of § 101.").

[21] 35 U.S.C. § 102.

This Court has held that eligibility test pertains when "consider[ing the claims] as a whole"[24] and without "dissect[ing] the claims into old and new elements."[25] Rather than requiring analysis of which *elements or steps* of the claims are *new*, the test requires identifying the *kind* of discovery or invention made. One must still determine what (if anything) the *invention* consists of, to assure that the claim as a whole contains a technological advance relative to the public domain science, nature, and ideas on which it relies.[26]

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[22] *See. e.g., Funk Bros. Seed Co.*, 333 U.S. at 130-31 (although Bond "made a new and different composition.... we think that that [the claimed, novel] aggregation of species fell short of invention within the meaning of the patent statutes"); *Flook*, 437 U.S. at 588 (refusing to find the claim eligible where novelty existed, but only in using a new mathematical formula in "an otherwise conventional method"). *Cf. Diamond v. Chakrabarty*, 448 U.S. 303, 310 (1980) ("Here, by contrast, the patentee has produced a *new* bacterium *with markedly different characteristics* from any found in nature....") (emphasis added).

[23] *See, e.g., Flook*, 437 U.S. at 591-92 ("[T]he novelty of the mathematical algorithm is not a determining factor at all.").

[24] *Flook*, 437 U.S. at 594. *See id.* at 588.

[25] *Diehr*, 450 U.S. at 188.

[26] Some amici make this point in the particularly troubling context of claims for which the only advance resides in a claim

The invention in the application test also pertains without considering the qualitative degree of any advance, beyond what was previously known in the art, to determine if a patent is warranted. That is the subject of non-obviousness analysis under Section 103.[27] Although Section 103 *could* be used to exclude claims for non-inventive applications of science, nature, and ideas,[28] it is not an effective substitute for Section 101.

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step requiring performance of a mental act, with information that the patent itself discloses. *See, e.g.*, Brief of Amicus Curiae Law Professor Kevin Emerson Collins at 1-8. But the invention in the application test is not limited to that context. Other amici suggest that the discovery of a previously existing, unexpected property provides for eligibility so long as the claimed application (as a whole) is new and useful. *See, e.g.*, Brief of Amici Curiae 20 Law and Business Professors at 3. But such a discovery is unpatentable and must be treated as if it were publicly known. For eligibility, there must be another, and inventive, concept beyond merely using that property.

[27] 35 U.S.C. § 103. *See, e.g., Hotchkiss v. Greenwood*, 52 U.S. (11 How.) 248, 265 (1851); *Atlantic Works v. Brady*, 107 U.S. 192, 200 (1883). *See generally* Giles S. Rich, *Laying the Ghost of the "Invention" Requirement,* 1 APLA Q.J. 26, 29-34 (1972-73) (noting that a qualitative "invention" requirement is reflected in the Constitution's restriction to "Inventors"; discussing the history of the invention standard preceding and following *Hotchkiss*, and the legislative effort to establish in Section 103 a clearer qualitative standard by reference to "unobviousness" of the "subject matter as a whole"); Walterscheid, Study, *supra*, at 335-44 (discussing arguments for a qualitative invention standard in the Constitution).

[28] *See, e.g., Dann v. Johnston*, 425 U.S. 219, 220 (1976). Because science, nature, and ideas must be treated as if publicly known, for any *non-obvious* invention to exist in a claim applying such discoveries it must exist in the application.

Section 101 provides clear public notice that the public domain of science, nature, and ideas is outside the boundaries of the patent system. The gate-keeping role of Section 101 minimizes burdens on the patent system, by barring all claims lacking *any* invention in the application.[29] Section 101 thus poses a less complicated and less resource-intensive initial analysis than patentability evaluations under Section 103. The Section 101 analysis usually can be made on the face of the specification, because its disclosure must explain the nature of the invention. The disclosure enables a threshold decision on eligibility,[30] before engaging in costly judicial or administrative fact-finding and qualitative legal evaluation of sufficiency of the advance under Section 103.[31] The focus on legal sufficiency also masks the clarity of public notice regarding the limits of the patent system, impeding the development of rules of exclusion that can provide private guidance.

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[29] Some amici argue that patentability doctrines, such as novelty, obviousness, and utility can weed out "bad" patents, and that yet other doctrines such as declaratory challenges and restrictions on injunctive relief can minimize their adverse effects. *See, e.g.*, Brief of Amici Curiae 20 Law and Business Professors at 25-30. But none of these doctrines provide the threshold, gate-keeping benefits of Section 101 by avoiding such harms categorically.

[30] *See, e.g.*, *Diehr*, 450 U.S. at 188-89; *id.* at 213 (Stevens, J., dissenting).

[31] *See, e.g.*, *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966) (discussing the required factual analyses, including differences between the claimed invention and the prior art and the level of skill in the art, and noting that the "ultimate question ... is one of law"); *KSR Int'l. Co. v. Teleflex, Inc.*, 550 U.S. 398, 416, 427 (2007) (discussing the reasons for the obviousness requirement, which "is a legal determination").

Further, the invention in the application test pertains without considering the correlation between the claimed advance disclosed and the breadth of exclusive rights granted. That is the subject of the written description and enablement requirements of Section 112, first paragraph.[32] Applicants do not create the science or nature that they discover, and are not entitled to claim them, abstract ideas, or non-inventive applications thereof.[33] This is true even when the claimed applications (and thus the exclusive rights) are limited in scope, are capable of being made and used, and are sufficiently described. Thus, Section 101 performs a role that Section 112 cannot. In contrast, ineligible claims for non-inventive applications of science, nature and ideas *also* may conflict with Section 112 requirements.[34]

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[32] 35 U.S.C. § 112, para. 1.

[33] *See, e.g., O'Reilly,* 56 U.S. at 113 ("In fine he claims an exclusive right to use a manner and process which he has not described and indeed *had not invented,* and therefore *could not describe* when he obtained his patent.") (emphasis added). *Cf. Chakrabarty,* 447 U.S. at 311-12 (noting that before 1930 artificially bred plants were thought to be products of nature and incapable of an adequate written description, and that the Plant Patent Act changed the view of their status and relaxed the written description requirement); *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred International, Inc.*, 534 U.S. 124, 133-35 (2001) (same, noting that the Plant Patent Act was not meant to exclude plant protection under the predecessor to Section 101, even though they were not then thought to fall within that provision).

The invention in the application test cannot be evaded by adding non-inventive limits that restrict the scope of claims, even if doing so necessarily avoids preempting all possible uses of previously known or newly discovered science, nature, and ideas.[35] Artful drafting of field-of-use restrictions, insignificant additional structures, trivial physical transformations, or other non-inventive claim limitations may reflect legal skill, but does not impart patent eligibility.[36] Such limits may restrict scope, but add "nothing ... of significance" to the otherwise patent-ineligible discovery.[37]

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[34] *See, e.g., Holland Furniture Co. v. Perkins Glue Co.*, 277 U.S. 245, 257 (1928) ("That the patentee may not by claiming a patent on the result or function of a machine extend his patent to devices or mechanisms not described in the patent is well understood."). *See generally* Joshua D. Sarnoff, *Shaking the Foundations of Patentable Subject Matter* 61-63 (unpublished draft Apr. 2008) (discussing how the 1836 Patent Act's requirement for clear claims provided another doctrinal basis for excluding patents on natural discoveries, by prohibiting overbreadth and abstractness), at http://www.wcl.american.edu/pijip/go/research-and-advocacy/ip-policy-and-law-reform.

[35] *See Diehr*, 450 U.S. at 192 n.14 ("The claims [in *Flook*], however, did not cover every conceivable application of the formula. We rejected in *Flook* the argument that because all possible uses of the mathematical formula were not pre-empted, the claim should be eligible for patent protection."). *Cf. Flook*, 437 U.S. at 590 n.11 ("it is not entirely clear why a process claim is any more or less patentable because the specific end use contemplated is the only one for which the algorithm has any practical application").

[36] *See, e.g., Diehr*, 450 U.S. at 191-92; *Flook*, 437 U.S. at 590; *Benson*, 409 U.S. at 70, 72.

The Court of Appeals below, however, focused on this Court's dicta in *Benson* and *Diehr* to highlight "[t]he question" of whether the claim would "pre-empt substantially all" applications of science, nature, and ideas.[38] But as this Court held in *Dolbear v. American Bell Telegraph Co.*,[39] preemption is not the right question. After describing Bell's patented "discovery" and "art" as a particular method of placing electric current in a specific condition for use in sound transmission,[40] the Court held that the invention was a pioneering (i.e., a highly inventive) *application* of the principles of electromagnetism, limited to the particular process claimed. The Court then noted that the claim would not be invalid even if it were the *only* way to accomplish the result—and thus would preempt all ways of doing so.[41]

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[37] *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124, 138 (2006) (Breyer, J., dissenting from dismissal as improvidently granted) (also noting restrictions on the claim's scope and physical transformations in performing the process). *See Benson*, 409 U.S. at 71 (referring to such artful claim drafting as "direct attempts" to claim computer programs). *Cf.* EPC, *supra*, art. 52(3) (prohibiting eligibility of excluded categories "as such").

[38] *In re Bilski*, 545 F.3d 943, 954 (Fed. Cir. 2008) (en banc). *See id.* at 952-53 (citing *Benson*, 409 U.S. at 71-72, and *Diehr*, 450 U.S. at 187-88).

[39] 126 U.S. 1 (1888).

[40] *Id.* at 534-35.

The Court should clarify here that preemption is *not* the *test* for patent eligibility. Claims that limit scope but lack invention in the application of science, nature or ideas necessarily avoid preemption. Rather, preemption is the *consequence* of improperly claiming science, nature, or ideas without invention in the application *and* without any other significant limits on the scope of application of such a discovery.

B. Particularity or Tangibility, Which Is Required by the Machine or Transformation Precedents, Is Insufficient Without Invention in the Application.

The invention in the application test explains the proper application of this Court's precedents regarding patent eligibility for process claims tied to a machine (or other structure) or that result in a physical transformation. This Court has referred to the machine and transformation precedents as "the clue" to patent eligibility, and the Court of Appeals below elevated them (at least for now) to an exclusive test of eligibility.[42] However, merely tying a process claim to some specific machine or having some kind of tangible effect will not impart eligibility without invention in the application. The same is true for claims in the other subject matter categories, which also recite particular things or have tangible effects when used.[43]

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[41] *See id.* at 535 ("It may be that ... practically, his patent gives him its exclusive use for that purpose.... It will, if true, show more clearly the great importance of his discovery, but it will not invalidate his patent."). *See also In re Tarczy-Hornoch*, 397 F.2d 856, 860 (C.C.P.A. 1968) (en banc); *id.* at 869 (Kirkpatrick, J., dissenting).

For the first century of American patent law, doubts were initially expressed about, and later this Court explicitly prohibited, claiming processes that were not restricted to *particular* physical machines or implementing structures.[44] This was because patents for processes that were not limited to particular, invented structures would claim scientific principles or abstract ideas (specific results) without any invention in their application.[45]

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[42] *Benson,* 409 U.S. at 64, 70 (citing *Cochrane v. Deener,* 94 U.S. (4 Otto) 780, 787-88 (1876). *See Bilski,* 545 F.3d at 954, 956.

[43] *Cf.* Brief for the Respondent at 36 n.14 (the machine-or-transformation test is separate from the preemption test).

[44] *See Evans v. Eaton,* 16 U.S. (3 Wheat.) 454, 517 (1818) (Story, J., App. Note II, *On the Patent Laws*); *O'Reilly,* 56 U.S. (15 How.) at 116, 119; and *Corning v. Burden,* 56 U.S. (15 How.) 252, 268-69 (1853). *See also Lowell v. Lewis,* 15 F. Cas. 1018, 1019 (C.C.D. Mass. 1817) (No. 8,568); *Barrett v. Hall,* 2 F. Cas. 914, 923 (C.C.D. Mass. 1818) (No. 1,047); *Wyeth v. Stone,* 30 F. Cas. 723, 727 (C.C.D. Mass. 1840) (No. 18,107); *Howe v. Abbott,* 12 F. Cas. 656, 657-58 (C.C.D. Mass. 1842) (No. 6,766). *See generally* Sarnoff, *supra,* at 63-83.

[45] *Corning* thus held that process claims were invalid when they exceeded the disclosed modes (or machines) for

This Court first authorized patents for inventive processes that were *not* limited to the disclosed physical means for accomplishing a result (or to similar machines or structures operating on the same principles) in *Cochrane v. Deener.*[46] For patent eligibility of a process that was *not* tied to a particular machine, however, *Cochrane* required that it must be "a *mode* of *treatment* of *certain materials* to produce a given result. It is an act, or a series of acts, performed upon the subject-matter *to be transformed and reduced to a different state or thing....* The process requires that certain things should be done with *certain substances....*"[47]

Thus, after *Cochrane,* patent eligibility for processes could be found when the claim reflected invention either: (1) in the *particular machine* (or structure) implementing a discovery, rather than in a non-inventive application performed with any or with no machine; *or* (2) by transforming *certain substances,* which were understood as *tangible*

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implementing them. *See* 56 U.S. (15 How.) at 269 ("His patent having a title which claims a machine, and his specification describing a machine, to construe his claim as for the function, effect, or result of his machine, would certainly endanger, if not destroy, its validity."). Similarly, *O'Reilly* held that "the patent was not supported because this [scientific] principle [of using electromagnetism] was embodied in it.... [I]t was supported, because he had invented a mechanical apparatus." 56 U.S. (15 How.) at 116. *See id.* at 119 ("by the use of certain means").

[46] 94 U.S. (4 Otto) at 787-88.

[47] *Id.* at 788 (emphasis added).

objects.[48] But even for physical or chemical transformations, *invention* was still required in the application of scientific principles. Applying an old process or structure to a new *but analogous* substance or use may have employed a particular machine or applied to a tangible object. But it did not constitute invention, and such claims were not patent eligible.[49]

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[48] *See, e.g.,* 1 Robinson, *supra,* at 178–79 (explaining that mental operations are not complete inventive acts, as they cannot produce physical effects, and thus are "neither 'a thing made,' nor 'a manner of making'"); Giles S. Rich, *The Relation between Patent Practices and the Anti-Monopoly Laws,* 24 J. Pat. & Trademark Off. Soc'y 159, 171 (1942) (explaining that for an invention—"a product of the mind"—"[t]o be patentable it must be capable of being embodied in a tangible form as an article of manufacture, machine, device or composition of matter or as a method or process which can be carried out by physical means").

[49] *See, e.g., Ansonia Brass & Copper Co. v. Elec. Supply Co.,* 144 U.S. 11, 18 (1892) ("[N]othing is better settled in this court than that the application of an old process to a new and analogous purpose *does not involve invention,* even if the new result had not before been contemplated.") (emphasis added); *Howe,* 12 F. Cas. at 658 ("The application of an old process to manufacture an article, to which it had never before been applied, is not a patentable invention. There must be some new process, or some new machinery used, to produce the result."). The premise for this approach was the belief that all uses (even those not contemplated) were inherent in the *inventive principle* of a machine or a process, and only the first inventor of the thing or process was entitled to a patent. In contrast, non-analogous uses involved a different inventive principle, and thus the new uses or application to new things could be patented. *See Ansonia Brass & Copper Co.,* 144 U.S. at 18–19. *See also* 1 Robinson, *supra,* at 119–23. *But cf. In re Thuau,* 135 F.2d 344, 347 (C.C.P.A. 1943) (holding that *all* new

Following *Cochrane* and *Dolbear*, disputes raged through the next century regarding the validity of claims to the function of a disclosed machine (i.e., an effect or result), which would extend process or structure claims beyond the disclosed uses or machines to other uses or machines.[50] But these cases addressed claim scope rather than eligibility. The patents at issue disclosed *particular* machines reflecting *invention* in the application, but the claims covered *all* processes or machines for accomplishing the same result.[51]

In sum, this Court's precedents require for the eligibility of process claims either particular implementing structures (machines) or application to certain tangible substances (transformations). But under these precedents, particularity or tangibility were necessary, not sufficient, conditions for eligibility; by particular machines and tangible substances were *meant* inventive applications.[52] That a claim

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uses are not a new "art" under the statute, and might make vendors secondarily liable based on their customers' activities).

[50] *See, e.g., Tarczy-Hornoch*, 397 F.2d at 858–65 (citing, inter alia, *Risdon Locomotive Works v. Medart*, 158 U.S. 68 (1894), *Westingthouse v. Boyden Power Brake Co.*, 170 U.S. 537 (1897), *Expanded Metal Co. v. Bradford*, 214 U.S. 366 (1908), and *Waxham v. Smith*, 294 U.S. 20 (1934)).

[51] Later cases held that *Risdon Locomotive Works* should not be understood as prohibiting all mechanical process patents. *See, e.g., Tarczy-Hornoch*, 397 F.2d at 863 (citations omitted).

[52] Morse's claim to a symbolic code "for telegraphic purposes" is not to the contrary. *O'Reilly*, 56 U.S. at 86. *See supra* note 45. That claim need not be construed as untethered to the

requires the use of a particular machine or application to a specific, tangible substance may not make the application inventive. Recent decisions of the Court of Appeals have failed to recognize the need for *invention* in applications of discoveries using particular machines or achieving tangible transformations.[53] Similarly, recent decisions have improperly focused on what the information generated represents, rather than on what the invention is.[54]

C. The Claims At Issue Are Ineligible, Non-Inventive Applications of an Abstract Idea.

In the instant case, the Court must determine whether there is invention in the application of an

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disclosed, inventive telegraph machine for its use. Even if it were so construed, there may have been invention in the claimed, particular application of the abstract idea of using symbols to transmit information. But in that case, machines or transformations may be unnecessary as well as insufficient.

[53] *See, e.g.,State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 1373, 1375 (Fed. Cir. 1998); *Prometheus Labs, Inc. v. Mayo Collaborative Servs.*, Appeal No. 2008-1403, 2009 WL 2950232, at *8 (Fed. Cir. Sept. 16, 2009). Respondent similarly fails to appreciate this point. *See* Brief for the Respondent at 40 (suggesting that a physical transformation in an *assaying* step is sufficient for eligibility of a medical diagnostic process applying a discovered phenomenon).

[54] *Compare Alappat*, 33 F.3d at 1544, *and Arrhythmia Research Technology Inc. v. Corazonix Corp.*, 958 F.2d 1053, 1059–61 (Fed.Cir.1992), *with In re Abele*, 864 F.2d 902, 907–09 (C.C.P.A. 1982), *In re Meyer*, 688 F.2d 789, 795–96 (C.C.P.A. 1982), *and In re Grams*, 888 F.2d 835, 839–40 (Fed. Cir. 1989).

"abstract idea." In *Rubber-Tip Pencil Co. v. Howard,*[55] this Court explained what was meant by an abstract idea. After analyzing the specification, the Court determined that the claim was for a pencil eraser (without the pencil and not limited to a particular shape) having a cavity smaller than a pencil to elastically hold the eraser onto a pencil. But the public already possessed general knowledge of the elasticity of erasers and of putting things into elastic eraser cavities. Thus, the only thing "left for this patentee" (i.e., the only *valid* claim to creative advance) was the specific idea that if one inserts a *pencil* into a smaller rubber cavity the rubber will cling to the pencil.[56] The Court then noted that "an idea of itself is not patentable" and held that the claimed eraser—the "new device by which it [the unpatentable idea that the elastic property of rubber is triggered when a pencil is inserted] may be made practically useful" —was not new (and thus was not inventive).[57] The Court thereby identified the unpatentable "abstract idea" as either a *property* of rubber (elasticity) or a *result* that was sought (binding to pencils).

The category of "abstract ideas" thus reflects either functional properties on which claimed inventions operate or results to be achieved by employing those properties.[58] For either, there must be invention *in the application* to establish eligibility. This was made clear in *Marconi Wireless Telegraph Company of America v. United States.*[59] The Court held that the abstract ideas of tuning a radio antenna circuit (which also was not new) and of substituting a known structure to better accomplish the tuning were not patent-eligible inventions.[60] "[M]erely making a known element of a known combination adjustable by a means of adjustment known to the art, when no new or unexpected result is obtained *is not invention.*"[61] *Marconi Wireless Telegraph* not only demonstrates the eligibility requirement for a creative technological advance when applying a functional property or a result. It also explains the precedents for claims to combinations of elements that lack any significant new function. Lacking any patent-eligible invention, such claims also lack any non-obvious invention.[62]

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[55] 87 U.S. (20 Wall.) 498 (1874).

[56] *Id.* at 507.

[57] *Id.*

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[58] *See, e.g., Le Roy*, 55 U.S. (14 How.) at 175 (explaining that invention does not exist in the discovery of motivating powers or properties, but "in applying them to useful objects"); *id.* ("A patent is not good for an effect, or the result of a certain process, as that would prohibit all other persons from making the same thing by any means whatsoever.").

[59] 320 U.S. 1 (1943).

[60] *See id.* at 32–36, 49.

[61] *Id.* at 32 (emphasis added).

[62] *See, e.g., KSR Int'l Co.*, 550 U.S. at 415–17 (citing *United States v. Adams*, 383 U.S. 39 (1966), *Anderson's-Black Rock,*

In the present case, the Court should affirm the U.S. Patent and Trademark Office's rejection of Petitioners' claims at issue.[63] Those claims (whether or not restricted to a specified mathematical formula[64]) reflect only non-inventive applications of the abstract idea of hedging risk. That result is achieved by the non-inventive process of having a middle-man enter into contracts that balance out uncertain sales amounts at fixed prices (like the slightly more common process of balancing uncertain prices for fixed amounts). The claimed process: (1) lacks any creative, technological advance in any particular structure to implement it or in any tangible transformation that it achieves; and (2) is restricted in its scope only by a field-of-use limitation to the context of commodity purchases.[65] The claims

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Inc. v. Pavement Salvage Co., 396 U.S. 57 (1969), and *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273 (1976)).

[63] *See* U.S. Pat. App. No. 08/833,892.

[64] *See* Brief for the Petitioners at 7–8.

[65] *See id.* at 3-6; *id.* at 7 (Claim 1). Nothing in Claim 1 is limited to energy supplies (or fluctuations in prices due to weather variations). Nothing requires any particular method (including Monte-Carlo modeling) to determine the "fixed price" or the "fixed rate based on historical averages." *Id.* at 7. *See id.* at 5–6. Rather, the fixed price could be based on collected and averaged data from a particular consumer's past use over some unspecified period of time, at a price the consumer is willing to accept. Claim 4 (if before the Court) only limits Claim 1 to the field of energy commodities (where prices are sensitive to weather), and (possibly) to mathematically calculating the fixed price according to a formula with various data inputs (given that "determined by the relationship" could mean "reflects" and no calculation may be required). *Id.* at 8. If

lack any new discovery or invention at all, much less invention in the application of the abstract idea of hedging risk. This is true even though the claims do not preempt all applications of hedging and even if some claims may sometimes effectively require a general-purpose computer to do the math to implement them.[66] This Court should bar these claims at the threshold.

II. Neither the Constitution Nor the Patent Act Authorizes Patents For Non-Inventive Applications of Science, Nature and Ideas.

Before the end of the 18th Century, it was unequivocally recognized at English common law that scientific principles, naturally occurring materials, and abstract ideas were not susceptible to private ownership by patents granted under the Statute of Monopolies.[67] Scientists who made such discoveries were morally obliged to freely disseminate that knowledge for social benefit.[68] Once such discove-

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Claim 4 contains any creativity beyond Claim 1, it must lie in data gathering, which is not part of the claim, or in the mathematical formula, which must be treated as prior art.

[66] *Cf. id.* at 7. Claim 4 does not specify the iterations (i) in the formula, and thus may entail a trivial calculation if calculation is required, although data therefor may be difficult to obtain.

[67] *See, e.g., Boulton*, 126 Eng. Rep. at 667 (interpreting 21 Jac. 1, c. 3, § 6 (1623)).

[68] *See, e.g.*, 17 Parliamentary History, *supra*, at col. 999 (scientists are "intrusted by Providence with the delegated

ries were disclosed in a patent application, they were required be treated as if they were already known.[69] If any invention existed to support a patent, it must therefore have been in the application of science, nature, and ideas.[70] It was with these understandings that the relevant constitutional and statutory provisions were enacted.

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power of imparting to their fellow-creatures that instruction which heaven meant for universal benefit; they must not be niggards to the world, or hoard up for themselves the common stock"); 1 *Robinson, supra,* at 39 ("To benefit by the discoveries of his fellow-men is thus not only a natural right, it is also the natural duty which every man owes to himself and to society; and the mutual, universal progress thence resulting is the fulfillment of the earthly destiny of the human race.").

[69] *See Neilson v. Harford,* 151 Eng. Rep. 1266, 1273 (1841) ("We think the case *must be considered as if, the principle being well known,* the plaintiff had first *invented a mode of applying it* by a mechanical apparatus to furnaces; and his invention then consists in this [structural arrangement]....") (emphasis added). *See also Flook,* 437 U.S. at 592 & n.13 (citing, *inter alia, O'Reilly,* 56 U.S. at 115, and *Tilghman v. Proctor,* 102 U.S. 707 (1880)).

[70] *See Boulton,* 126 Eng. Rep. at 667 (Lord Eyre, C.J.) ("Undoubtedly there can be no patent for a mere principle, but for a principle so far embodied and connected with corporeal substances as to be in a condition to act and to produce effects in any art, trade, mystery, or manual occupation, I think there may be a patent); *id.* at 663 (Buller, J.) ("But then it was said, that though an idea or a principle alone would not support the patent, yet that an idea reduced into practice, or a practical application of the principle was a good foundation for a patent, and was the present case.").

Nothing in the Constitution's record or in the contemporaneous statutory enactments suggests any intent to depart from the deeply held English belief that science, nature, and ideas could not be patented because they were to be free to all for use.[71] Judicial decisions from the early 19th Century interpreting the Patent Act unequivocally state this restriction on patentable subject matter.[72] Judicial decisions and treatises from later in the century emphatically repeat the point, treating the constitutional and statutory language as limited to inventions.[73]

The earliest explicit statement to this effect by this Court is in the second half of the 19th Century, in *Le Roy v. Tatham*: "A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right."[74] *O'Reilly* repeated the point, and made clear that such new discoveries were to be treated (as in England) as if they were publicly known.[75] And by the middle of the 20th Century, *Funk Brothers Seed Co.* clarified that "[i]f there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end."[76] Congress revised Section 101 shortly thereafter, without changing the requirement for invention in the application.

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[71] *See, e.g.*, Walterscheid, Study, *supra*, at 309–27, 348–51 (discussing the evidence from the records of the Constitution and the 1790 and 1793 Acts).

[72] *See, e.g.*, *Lowell*, 15 F. Cas. at 1019 ("It has been often decided, that a patent cannot be legally obtained for a mere philosophical or abstract theory."). "Philosophical" was then understood to mean pertaining to the natural sciences. *See, e.g.*, The Compact Edition of the Oxford English Dictionary 180 (Oxford Univ. Press 1971).

[73] *See, e g.*, *In re Kemper*, 14 F.Cas. 286, 287 (C.C.D. D.C. 1841) (No. 7,687) ("'Invention differs from discovery.'... A discovery, in this sense, is not the subject of a patent; and it will be found, by a careful perusal of the constitution and laws of the United States upon the subject of patents for useful arts, &c., that it is not there used in this sense, but always as synonymous with invention.") (citing Webster's dictionary); Albert H. Walker, Text-book of the Patent Laws of the United States of America 2 (2d ed. 1889) ("The word 'discovery' does not have either in the Constitution or the statute, its broadest signification. It means invention, in those documents, and in them it means nothing else.").

A. The Changes Made in the 1952 Patent Act Did Not Alter the Invention in the Application Test.

In Section 101, Congress recodified without relevant change the statutory eligibility language that was then in existence, while making certain specific changes to the definitions in Section 100.[77] Congress thus preserved the judicial interpretations that had been developed, except to the extent they were affected by the definitional changes.[78] Section

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[74] 55 U.S. (14 How.) at 175.

[75] *See* 56 U.S. (15 How.) at 115–16 (quoting *Neilson*).

[76] 333 U.S. at 130.

[77] *See, e.g.*, H.R. Rept. 82-1928, at 6 (1952)

[78] *See, e.g.*, *Central Bank of Denver v. First Interstate Bank of Denver*, 511 U.S. 164, 185 (1994) (ratification is implied when

100 of the Patent Act defined "invention" to include "invention or discovery" without substantive change, so as to simplify the statute's language.[79] Section 101 also changed the archaic term "art" to "process," and Section 100 defined "process" to include both "method" and "new uses of a known" product or process.[80] These changes made clear (as this Court's cases had held) that processes and new uses were potentially eligible, but did not affect the exclusions for science, nature, and ideas nor alter the requirement for invention to exist in their application.[81]

In particular, the addition of the "new use" provision reversed earlier appellate cases suggesting that inventive creativity *could never* exist in applying an old structure or process to a new use.[82] The

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Congress "reenacts statutory language that has been given a consistent judicial construction").

[79] *See, e.g.*, Pasquale J. Federico, *Commentary on the New Patent Act*, 75 J. Pat. & Trademark Off. Soc'y 161, 175 (1993) (1954) (explaining that the old statute used "invention or discovery" in many places; the new definition allowed use of the singular "invention").

[80] 35 U.S.C. §§ 100(a) & (b), 101. *See* H.R. Rept. 82-1928, at 6.

[81] *See, e.g.*, H.R. Rept. 82-1928, at 6; Riesenfeld, *supra*, at 301 (explaining that "it must not be concluded that the well established rule which excludes the mere discovery of natural laws and phenomena or the scientific explanation of the operation of known devices or processes from the realm of patentable inventions has lost its recognition").

[82] *See, e.g.*, *Howe*, 12 F. Cas. at 658. *But cf. Ansonia Brass & Copper Co.*, 144 U.S. at 18.

issue was brought to legislative attention by *In re Thuau,* which had deemed new uses of existing products to be beyond the statutory language—as not a new art—even though the new use was inventive.[83] However, in rejecting the *Thuau* doctrine and its extreme prohibition on patenting *inventive* new uses, Congress did not adopt the opposite extreme position of authorizing patents for *non inventive* new uses.[84] Nothing in the history indicates any intent to alter the requirement for invention in the application. Accordingly, since enactment of Section 100(b), this Court has consistently affirmed the requirement for invention in any application of science, nature, and ideas.

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[83] *See* Riesenfeld, *supra*, at 298 (citing *Thuau*, 135 F.2d at 347).

[84] *See, e.g., id.* at 299–300 ("[T]he background of the amendment gives reason to assume that a newly discovered use for a known substance, machine or process is still only patentable if it is not merely analogous or cognate to the uses heretofore made.... [I]t is fair to state that in essence the new statutory definition of 'process' restores the broad principles of patentability flowing from a careful analysis of the exposition given by the Supreme Court in the *Ansonia* case."); Federico, *supra*, at 177–78 ("The reference to the new use of a known machine or manufacture in the definition [in Section 100(b)] merely means that processes may utilize old machines or manufactures and the reference to the new use of a known process simply indicates that the procedural steps in a patentable process might be old."). *Cf. Ansonia Brass & Copper Co.*, 144 U.S. at 18 ("[I]f an old device or process be put to a new use, which is not analogous to the old one, and the adaptation of such process to the new use *is of such a character as to require the exercise of inventive skill to produce it*, such new use will not be denied the merit of patentability.") (emphasis added).

B. Interpreting the Patent Act to Authorize Patents for Non-Inventive Applications Would Conflict With the Limits in the Constitution.

Interpreting Section 101 of the Patent Act—by itself or in light of Section 273(b)[85]—so broadly as to authorize eligibility of non-inventive applications would conflict with this Court's consistent statutory interpretation that science, nature, and ideas are unpatentable. It also would raise serious constitutional conflicts that should be avoided.[86] Patent eligibility for non-inventive applications of science, nature, and ideas would conflict with the constitutional premise that patents should issue only for "Discoveries" of "Inventors."[87] Similarly, such broad eligibility would conflict with the limitation of the patent system to human creativity in the "useful Arts,"[88] and would impede rather than "promote the Progress of Science and useful Arts."[89]

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[85] 35 U.S.C. § 273(b). When enacting Section 273(b), Congress expressed its concern over the effects of the Federal Circuit's new and expansive interpretation. *See, e.g.*, Cong. Rec. S14836 (Nov. 18, 1999). By enacting a separate restriction to *limit* those effects, Congress neither approved of the broad eligibility language of *State Street Bank* nor ratified that new test of eligibility. *See, e.g.*, *Alexander v. Sandoval*, 532 U.S. 275, 292 (2001); *Fogerty v. Fantasy*, 510 U.S. 517, 532 (1994).

[86] *See Gomez v. United States*, 490 U.S. 858, 864 (1989); *Ashwander v. Tennessee Valley Auth.*, 297 U.S. 288, 346–48 (1936).

[87] U.S. Const., art. I, § 8, cl. 8.

As discussed in the Court of Appeals by some of the *Amici* here,[90] and in other amicus briefs filed in this Court, all three constitutional limits are exceeded when patents issue for non-inventive applications of science, nature, and ideas. As discussed above, such claims directly conflict with the Constitution's limit to "Discoveries" of "Inventors." Further, as this Court held in *Graham v. John Deere Co.*, the patent power is "limited to the promotion of advances in the 'useful arts,'" and Congress may not "enlarge the patent monopoly without regard to the innovation, advancement or social benefit gained thereby."[91] Patents on non-inventive applications lack any creative, *technological* advance, and thus cross whatever line marks the border of the useful arts. Similarly, lacking the quid pro quo of disclosed technological advance, such patents create odious monopolies and impede, rather than promote, scientific and technological progress.[92]

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[88] *Id. See, e.g.*, Brief of Amici Curiae Center for Advanced Study and Research in Intellectual Property (CASRIP) and Research Affiliate Scholars at 12-20 (discussing the limits of the "useful Arts").

[89] U.S. Const., art. I, § 8, cl. 8. *See generally* Suzanne Scotchmer, *Standing on the Shoulders of Giants: Cumulative Research and the Patent Law*, 5 J. Econ. Persp. 29 (1991) (discussing the effects of patents on sequential innovation).

[90] *See* Brief of Amici Curiae Ten Law Professors, *In re Bilski*, Appeal No. 2007-1130 (Fed. Cir.), at 6–10.

[91] 383 U.S. at 5-6.

Such a broad interpretation of Section 101 would seriously and adversely affect innovation. Without invention in the application, patents would foreclose many (even if they do not preempt all) uses of scientific discoveries, including uses in further scientific and technological research. Eligibility for such claims would reward too little *invention* (or would impermissibly reward scientific discovery), while burdening too much sequential scientific discovery and technological invention.

The adverse effects on further scientific and technological development are particularly salient in light of the Court of Appeals recent expansive interpretation of the statutory infringement right to deny a meaningful exception for scientific experiments.[93] In contrast, science, nature, and ideas are the infrastructure for technological and other progress, and either sufficient incentives already exist or there are better alternatives for society than patents for the discovery of such infrastructure.[94]

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[92] *See, e.g., Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 146 (1989) (the patent laws reflect a "careful balance" between promoting innovation and permitting imitation); Walterscheid, Study, *supra*, at 31–58 (discussing the antimonopoly origins of the patent power under English and colonial law); 1 Robinson, *supra*, at 51-52 (distinguishing patents from odious monopolies in that the technological advance supplies the rights that the public would otherwise enjoy).

[93] *See Madey v. Duke Univ.*, 307 F.3d 1351, 1361-63 (Fed. Cir. 2002).

CONCLUSION

For the foregoing reasons, the Court should affirm the rejection of the patent claims at issue and hold that patent eligibility requires invention in the application of any previously known or newly discovered science, nature, or ideas.

Respectfully submitted,

JOSHUA D. SARNOFF
Counsel of Record for
Amici Curiae

BARBARA JONES
Attorney for
Amicus Curiae AARP

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[94] *See, e.g.*, Brief of Amici Curiae Ten Law Professors, at 11 n.20.

APPENDIX

APPENDIX A

LIST OF *AMICI CURIAE*

LAW PROFESSORS[1]

Lori B. Andrews
Distinguished Professor of Law
Chicago-Kent College of Law

Andrew Chin
Associate Professor
University of North Carolina School of Law

Ralph D. Clifford
Professor of Law
S. New England School of Law

Christine Haight Farley
Associate Dean and Professor of Law
Washington College of Law, American University

Sean Fiil Flynn
Associate Director, Program on Information Justice and Intellectual Property (PIJIP)
Washington College of Law, American University

Debra Greenfield
Visiting Scholar
UCLA Center for Genetics & Society

Peter A. Jaszi
Professor of Law
Washington College o f Law, American University

---

[1] Affiliations provided for identification purposes only.

Charles R. McManis
Thomas and Karole Green Professor of Law
Washington University School of Law

Lateef Mtima
Professor of Law and Director, Institute for Intellectual Property and Social Justice
Howard University School of Law

Malla Pollack
Formerly Visiting Associate Professor
U. of Idaho College of Law

Joshua D. Sarnoff
Professor of the Practice of Law
Washington College of Law, American University

AMICUS CURIAE BRIEF

(65)

No. 08-964

Supreme Court
OCT 2 - 2009
OFFICE OF THE CLERK

IN THE

Supreme Court of the United States

BERNARD L. BILSKI and RAND A. WARSAW,

Petitioners,

v.

DAVID J. KAPPOS, Under Secretary of Commerce
for Intellectual Property and Director,
U.S. Patent and Trademark Office,

Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES
COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF ENTREPRENEURIAL AND CONSUMER ADVOCATES *AMICI CURIAE* IN SUPPORT OF RESPONDENT

PAMELA SAMUELSON
Richard M. Sherman
Distinguished Professor of Law
& Information
UC Berkeley School of Law
Berkeley, CA 94720-7200

JASON M. SCHULTZ
Counsel of Record
UC Berkeley School of Law
Berkeley, CA 94720-7200
(510) 642-1957

Attorneys for Amici Curiae

225554

[illegible]

COUNSEL PRESS
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INTEREST OF THE *AMICI CURIAE*

This brief is filed on behalf of the following organizations and individuals who fund, speak, write, and work to support entrepreneurship and consumer interests, including the freedom to innovate.[1]

The Kauffman Foundation is the nation's largest foundation devoted to the advancement of understanding of entrepreneurship and the important role it plays in economies and societies.

The Electronic Frontier Foundation (EFF) is a nonprofit, membership-supported public interest organization working to protect consumer interests, civil liberties, innovation, and free expression in the digital world.

Public Knowledge is a Washington-based public interest group working to defend citizens' rights in the emerging digital culture.

Brad Feld has been an entrepreneur and venture capitalist for 25 years. He has personally been involved in the creation of over 300 companies.

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[1] No counsel for a party authored this brief in whole or in part, and no such counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than *amici curiae*, their members, or their counsel made a monetary contribution to its preparation or submission. Letters of the Parties' general consent to file amicus briefs are on file with the Court.

Robert J. Glushko is an Adjunct Full Professor at the University of California at Berkeley in the School of Information and the Director of the Center for Document Engineering. He has nearly thirty years of R&D, consulting, and entrepreneurial experience.

Mitchell Kapor is the founder of Lotus Development Corporation and the designer of Lotus 1-2-3, the "killer app" widely credited with having helped the personal computer become ubiquitous in the business world.

Jason Mendelson is a venture capitalist, lawyer and former software engineer. He makes a living from investing in early-stage innovative companies.

Tim O'Reilly is the founder and CEO of O'Reilly Media. O'Reilly is a computer book publisher, technology conference producer, and technology advocate. He has played a key role in commercializing the internet, open source software, and Web 2.0.

Eric von Hippel is Professor and Head of the Innovation and Entrepreneurship Group at the Massachusetts Institute of Technology's Sloan School of Management. He specializes in research related to the nature and economics of distributed and open innovation.

SUMMARY OF ARGUMENT

Petitioners ask this Court to reject Congress' sound policy judgment, ignore § 101's substantive limitation on patentable subject matter, and open the patent floodgates in a wide variety of fields where exclusive rights are unnecessary and harmful. This Court should decline this invitation for three reasons: (1) the history and structure of § 101 limit the construction of "process" to technological processes; (2) allowing patents on non-technological methods such as those in the business and service industries is unnecessary and harmful to innovation; and (3) removing the long-standing technological limit on § 101 processes would undermine the institutional competence of both the United States Patent and Trademark Office ("PTO") and the federal courts to protect innovation.

Just over ten years ago, the Federal Circuit decided *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), knocking patent law loose from its historical moorings and improperly injecting patents into business areas where they were neither needed nor wanted. Since then, the PTO has been flooded with patent applications on a wide variety of non-technological processes that cover services like arbitration, tax-planning, legal counseling, charity fundraising, and even novel-writing.[2] The results have been nothing short of disastrous: many business and service companies now face serious patent threats to both their freedom to operate and to innovate. And, because few if any service-based industries need patent incentives to provide consumers with professional competence and innovation, these costs far outweigh any appreciable benefit.

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[2] *See, e.g.*, U.S. Patent Application No. 11/930,920 (filed Oct. 31, 2007) (method for modeling and executing a deferred award instrument plan); U.S. Patent No. 6,607,389 (filed Dec. 3, 2001) (method of selecting a jury); U.S. Patent No. 6,544,037 (filed Apr. 17, 2001) (method for teaching experiential writing);

(Cont'd)

The method in this case is a textbook example. If Mr. Bilski were allowed to patent his hedging method, he would be able to extract rents and potentially put out of business any individual or company who invests money or even advises others on investing in the same way as he does. In patent law, limiting competition is tolerable only when incentives are needed to promote technological progress. Bilski's method, however, does nothing to advance the useful arts; in fact, one need not even use technology to invest as Bilski does. Moreover, there can be little question that investment firms—exemplars of service-based businesses—already strive to develop innovative and effective investing methods in order to entice more clients. Thus, providing exclusive rights to a single individual or firm to control such methods goes against the core of patent policy. *See Lab. Corp. of Am. Holdings v. Metabolite, Inc.*, 548 U.S. 124, 126-27 (2006) (Breyer, J., dissenting) ("[S]ometimes *too*

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U.S. Patent No. 5,102,338 (filed July 31, 1990) (method for training children in the art of dialogue writing); U.S. Patent No. 5,190,458 (filed Apr. 17, 1991) (method of assessing a person's character); U.S. Patent Application No. 10/869,082 (filed June 17, 2004) (process of relaying a story having a unique plot); U.S. Patent Application No. 11/081866 (filed Mar. 15, 2006) (method of directing funds to a charity).

much patent protection can impede rather than 'promote the Progress of Science and useful Arts.'" (quoting U.S. Const., art. I, § 8, cl. 8)) (emphasis in original).

Congress implicitly recognized as much in 1952, when it limited patentable subject matter to *technological* processes. Non-technological processes such business methods and services were understood to be excluded from that definition, an exclusion courts respected for decades. The Federal Circuit's *State Street* decision marked a dramatic departure from this sensible approach. Amici urge the Court to bring patent law back in line with the history, structure, and purpose of the Patent Act.

ARGUMENT

I. A "process" under § 101 of the Patent Act has historically been limited to technological processes

A. Congress did not intend for all processes to be patentable under § 101 – only those that advance technological progress

The history and structure of the Patent Act, and this Court's own decisions, dictate that the Court should construe the word "process" to cover only technological processes – processes that advance the development, understanding, or application of machines, manufactures, and compositions of matter.

Petitioners' interpretation of the word "process" in § 101 contradicts the spirit and holdings of this Court's guiding cases. Petitioners ask this Court to read "process" in § 101 as "extremely broad," effectively covering "any" process under the sun one could invent without significant limitation. *See* Pet'r's Br.18-20 (arguing that aside from laws of nature and abstract ideas, there are no limits on patenting processes). But Congress did not authorize patenting of "any [process] under the sun." *See* Resp't's Br. 28. In § 101, Congress expressly limited patenting to four types of inventions—processes, machines, manufactures, and compositions of matter—leaving other forms of innovation, such as methods of organizing businesses, mathematical formulae, alphabets, and languages, in the public domain where freedom to innovate is prevalent. *See Diamond v. Diehr*, 450 U.S. 175, 185 (1981) (noting that while each individual term of the four is to be construed broadly, "every discovery is *not* embraced within the statutory terms") (emphasis added); *Parker v. Flook*, 437 U.S. 584, 588-89 (1978).

These limits are informed by the history of the Patent Act.[3] When Congress last amended § 101 in 1952, it did so at the height of the industrial age, an era when science and engineering focused on machines, manufacturing and the creation of compositions of matter. These were the technologies that were patentable at the time, along with the processes of creating them.

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[3] As this Court has held, "a page of history is worth a volume of logic." *Eldred v. Ashcroft*, 537 U.S. 186, 200 (2003) (quoting *New York Trust Co. v. Eisner*, 256 U.S. 345, 349 (1921)).

Not surprisingly, the prevailing understanding at that time was also that non-technological processes, such as processes for doing business, practicing law, arbitrating disputes, raising money for charity, or writing novels, were unpatentable. *See In re Bilski*, 545 F.3d 943, 1001-02 (Fed. Cir. 2008) (en banc) (Mayer, J., dissenting) (collecting cases that rejected patenting of non-technological methods). When Congress amended § 101 in 1952, it merely ratified this prevailing understanding. *See Nationwide Mut. Ins. Co. v. Darden*, 503 U.S. 318, 322 (1992) (holding that where no contrary indication is present, courts presume Congress intended to ratify, rather than overturn, the prevailing legal understanding at the time). As Judge Giles Rich, one of the principle drafters of the 1952 Act, explained soon after the Act was passed:

> *Of course, not every kind of an invention can be patentable. Invaluable though it may be to individuals, the public, and national defense, the invention of a more effective organization of the materials in, and the techniques of teaching a course in physics, chemistry, or Russian is not a patentable invention because it is outside of the enumerated categories of "process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." Also outside that group is one of the greatest inventions of our times, the diaper service.*

Giles S. Rich, *Principles of Patentability*, 28 Geo. Wash. L. Rev. 393, 393-94 (1960) (quoting 35 U.S.C. § 101).

What all of Judge Rich's examples have in common – the diaper service, a more effective organizational approach, and improved techniques for teaching courses – is that they are non-technological in nature. Even if they *use* technology—a washing machine in the case of a diaper service, telephones in implementing an improved method of organization, and a blackboard and chalk in teaching—the processes themselves are not patentable because they do not promote or advance the *technologies* themselves. *See* U.S. Const. art. I, § 8, cl. 8 (the purpose of patents is to "promote the progress of . . . useful Arts."); *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 427 (2007) ("[T]he results of ordinary innovation are not the subject of exclusive rights under the patent laws. Were it otherwise patents might stifle, rather than promote, the progress of useful arts.").

Limiting patentability to technological processes also comports with the historical origin of "process", which this Court has held is synonymous with "art." *Diehr*, 450 U.S. at 182-84. As others have pointed out "[t]he term 'useful arts,' as used in the Constitution . . . is best represented in modern language by the word 'technology.'" Karl B. Lutz, *Patents and Science: A Clarification of the Patent Clause of the U.S. Constitution*, 18 Geo. Wash. L. Rev. 50, 54 (1949). *See also* Resp't's Br. 16.

In short, patentable processes must be *technological* processes.

B. A technological process advances the development, understanding, or application of a machine, manufacture, or composition of matter

What, then, is a "technological" process? Taken together, the Patent Act and this Court's interpretations thereof suggest it is a process that advances the development, understanding, or application of a machine, manufacture, or composition of matter – the other subject matter categories of § 101.

This definition is grounded in this Court's patent jurisprudence, which has consistently found these subject matters to be the "clues" for judging the patentability of processes. *See Diehr*, 450 U.S. at 187 (noting that the rejected *Flook* claims did not "contain any disclosure related to the *chemical processes* at work, the [electronic] *monitoring* of the process variables, or the [mechanical] *means* of setting off an alarm system." (quoting *Flook*, 437 U.S. at 586)) (emphasis added), 184 (finding the "clue" to patentability in an industrial rubber curing process to be its ability to transform a *composition of matter* into rubber); *Flook*, 437 U.S. at 588 n.9 (finding strong clues to patentability lay in processes tied to particular machinery or that change materials into a different state or thing); *Gottschalk v. Benson*, 409 U.S. 63, 70-71 (1972); *Cochrane v. Deener*, 94 U.S. 780, 788 (1876) ("A process is . . . an act, or a series of acts, performed upon the *subject-matter* to be transformed and reduced to a different state or thing.") (emphasis added).

As this Court has held, these clues are to be interpreted in light of the structure and purpose of the patent laws. *See Diehr*, 450 U.S. at 192 ("[W]hen a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, *is performing a function which the patent laws were designed to protect* (*e.g.*, transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101.") (emphasis added). And while the application of a principle to a machine or the transformation of an object into a different shape or things are "clues" to patentability, by contrast, the acts of claiming postsolution insignificant activity, abstract ideas, mental processes, laws of nature and natural phenomenon are "clues" to the lack of patentability. Further clues to unpatentability include claiming technology as a mere field of use limitation, *Flook*, 437 U.S. at 595, or claiming that a process is merely capable of being carried out on a machine but does not require a particular machine for its implementation. *Benson*, 409 U.S. at 71-72; *see also generally* Pamela Samuelson, *Benson Revisited: The Case Against Patent Protection for Algorithms and Other Computer Program-Related Inventions*, 39 Emory L.J. 1025 (1990).

The function of the patent laws historically was not only to protect new machines, manufactures, and compositions of matter, but also the "working or making of any manner of new manufactures within this realm." *Bilski*, 545 F.3d at 968 (Dyk, J., concurring) (quoting English Statute of Monopolies of 1623, 21 Jac. 1 c.3, s.6). One example of such workings and makings was James Watt's famous 1769 patent on a "[m]ethod of diminishing the consumption of fuel in [steam]-engines." *Id.* at 970 (citation omitted). These kinds of processes – the working and making of machines and manufactures – advanced these technological subject matters, advancing the useful arts. *See also Corning v. Burden*, 56 U.S. 252, 267-68 (1853) (noting patentable processes must produce a certain effect or manufacture by means of "chemical action, by the operation or application of some element or power of nature, or of one substance to another"); *Cochrane*, 94 U.S. at 787-88 (finding patentable processes to be "a mode of treatment of certain materials to produce a given result"); *Tilghman v. Proctor*, 102 U.S. 707, 722 (1880) (manufacturing processes are within the meaning of the term "art"). Thus, each time this Court has spoken to the patentability of processes, it has reinforced that valid processes must advance the development, understanding, or application of a machine, manufacture, or composition of matter.[4]

This definition of "process" is also consistent with the canons of statutory construction. Under the doctrine of *noscitur a sociis*, courts look to surrounding terms to inform the meaning of any individual term in a statute.

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[4] *See also Corning*, 56 U.S. at 267 (a patentable art includes "methods, or operations, . . . called processes" such as the "arts of tanning, dyeing, making water-proof cloth, vulcanizing India rubber, [and] smelting ores"); *Jacobs v. Baker*, 74 U.S. 295, 297 (1868) (quoting Curtis on Patents at 91:"But if the subject-matter be neither a machine nor a manufacture, nor a composition of matter, then, . . . it must be an art, for there can be no valid patent except it be *for a thing made*, or for the art or process of *making a thing*.") (emphasis added) (internal citations omitted).

See Babbitt v. Sweet Home Chapter of Comtys. for a Great Or., 515 U.S. 687, 687 (1995) (noting that "a word is known by the company it keeps"), 702 (*noscitur a sociis* counsels that a word "gathers meaning from the words around it" (quoting *Jarecki v. G. D. Searle & Co.*, 367 U.S. 303, 307 (1961)). Here, the word "process" is side-by-side with machine, manufacture, and composition of matter, and cannot be understood in isolation from its statutory companions.

As Judge Mayer notes in his *Bilski* Dissent, the machine-or-transformation test, if mechanically applied, is too easily circumvented with artful drafting. *Bilski*, 545 F.3d at 1008-09 (Mayer, J., dissenting). A comprehensive technological standard for patentability incorporates this Court's clues into a holistic and workable approach, tying the word "process" to the function of the patent laws (i.e., technological progress) while at the same time minimizing the mechanical and lexicographical games that artful drafters will play if a more wooden and less historical, statutory, and policy-driven standard is adopted.[5]

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[5] Some amici contend that lines such as "technology" are too blurry and thus unworkable as a boundary for patentable subject matter. However, contentious definitions are neither new to the law nor this Court. In fact, they exist in all areas of intellectual property law to provide judicial and administrative economy and to ensure that laws reflect public policy goals such as protecting the public domain. *See, e.g.*, *Metabolite*, 548 U.S. at 134 (Breyer, J., dissenting) (comparing line between patentable processes and unpatentable principles to copyright law's distinction between copyrighted material and non-copyrightable ideas); John R. Thomas, *The Patenting of the*

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II. Allowing patents on non-technological processes is unnecessary and harmful to innovation

Drawing the line between technological and non-technological processes is not only historically and structurally proper but also comports with sound patent policy. Expanding patentable subject matter to include non-technological processes such as Bilski's business method and those in other service-based professions is unsound because (a) there are other sufficient incentives for innovation in these industries already; (b) the research and development ("R&D") costs that typically justify patent protection are lower in these fields than in technological fields; (c) innovation is far more diffuse and collaborative in non-technological fields; and (d) extending patent protection to non-technological methods in business and service industries would disrupt settled expectations and impose substantial additional costs on investors and innovators.

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Liberal Professions, 40 B.C. L. Rev. 1139, 1145 (1999) (comparing doctrinal bars to patents on business methods, mental steps, algorithms and printed matter to copyright law limits that protect public domain). As this Court has pointed out in other cases, there is no reason to grant patent law exceptional status simply because it presents similarly tough questions. *See eBay Inc. v. MercExchange L.L.C.*, 547 U.S. 388, 391-92 (2006); *Dickinson v. Zurko*, 527 U.S. 150, 165 (1999).

A. Patent protection has been unnecessary to promote innovation in non-technological business and service methods

"[F]rom the outset, federal patent law has been about the difficult business 'of drawing a line between the things which are worth to the public the embarrassment of an exclusive patent, and those which are not.'" *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 148 (1989) (quoting 13 Thomas Jefferson, *Writings of Thomas Jefferson* 335 (Memorial ed. 1904)). Patents on non-technological methods fall firmly in the latter category.

Prior to the Federal Circuit's ill-conceived *State Street Bank* decision, businesses and service innovations thrived in the United States without patent incentives. *See* Resp't's Br. 24 (discussing myriad historical financial innovations that occurred without the benefit of patent protection); Leo J. Raskind, *The State Street Bank Decision: The Bad Business of Unlimited Patent Protection For Methods of Doing Business*, 10 Fordham Intell. Prop. Media & Ent. L.J. 61, 93 (1999) (citing the rapid growth of fast food restaurants, self-service gasoline stations, quick oil change facilities, ATMs, and alternative long-distance telephone services as examples of business innovations that occurred without patent incentives).

Today, even in more technologically-oriented service industries, patents are rarely sought or needed to encourage innovation for new business models or services. In a recent survey of over 1,300 high technology entrepreneurs, close to three-fourths of software and e-commerce startups reported that they do not own patents and have not applied for them, compared with less than twenty-five percent of similarly-situated biotechnology and medical device companies. Stuart J.H. Graham et al., *High Technology Entrepreneurs and the Patent System: Results of the 2008 Berkeley Patent Survey* ("*Berkeley Survey*"), 24 Berkeley Tech. L.J. (forthcoming 2009) (manuscript at 19), *available at* http://ssrn.com/abstract-1429049. Software and e-commerce companies report also seeking patent protection almost five times less frequently than computer hardware startups. *Id.* at 19-23 (reporting patents offer "relatively mixed to weak incentives to engage in innovation" in these areas). *See also id.* at 24 (reporting that patents provide between "slight" and "no incentive at all" for internal process innovations), 30-31 (reporting "patenting" as the least important incentive for innovation and maintaining competitive advantages). Thus, even in technology-based service industries, patent protection is largely disfavored as a source of incentives for innovation; for non-technological innovations, it would provide even less.

Instead, business- and service-oriented industries rely upon a wide variety of other incentives that promote innovation. These include first-mover advantages, complementary assets, trade secrets, and customer loyalty. *Berkeley Survey*, *supra*, at 27-28 (noting that first-mover advantages, complimentary assets, and trade secrecy are the most important strategies for securing competitive advantages among software and e-commerce startups), 32 (noting, in summary, that software and internet startups strongly prefer first-mover advantages to patents when seeking incentives to innovate).

First-mover advantages are particularly prevalent in business and service innovation because they provide competitive advantages that cannot be copied, such as consumer brand loyalty and switching costs. *See* Stefania Fusco, *Is the Use of Patents Promoting the Creation of New Types of Securities?*, 25 Santa Clara Computer & High Tech L. J. 243, 256 (2009) (citing Peter Tufano, *Financial Innovation and First-Mover Advantages*, 25 J. Fin. Econ. 213, 214-15, 234-35 (1989) and Helios Herrera & Enrique Schroth, *Profitable Innovation Without Patent Protection: The Case of Derivatives* 6 (Feb. 25, 2003), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=384822); Adam B. Jaffe & Josh Lerner, *Innovation and Its Discontents: How Our Broken Patent System Is Endangering Innovation and Progress, and What To Do About It* (2004) ("*Innovation Discontents*") at 47 (discussing brand loyalty and consumer learning curves as strong first mover advantages over competitors); Wesley M. Cohen et al., *Protecting Their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (or Not)* (Nat'l Bureau of Econ. Research, Working Paper No. W7552, 2000), *available at* http://ssrn.com/abstract=214952.

For example, in frequent flyer programs, the first airline to convince a customer to invest often remains the primary program for that customer—despite robust competition from other airlines—because of the customer's substantial investment in the program and the high switching costs associated with starting over. Such programs also face little danger of the kind of copying and free-riding that patents are meant to prevent. One airline can copy the general rules and structure of another's program, but the true value and competitive advantage are in the customer's investment and loyalty to their account and achieving the benefits it offers. At the same time, competition keeps the pressure on airlines to continue innovating and responding to consumer demand, so that the switching costs do not become worthwhile to the customer. Patent incentives, on the other hand, would not encourage such competition—if customer-friendly programs like frequent flying were patentable, then the first airline would gain the spoils, and other airlines would be prevented from innovating and competing. *See also* Fred Smith & Brian Dumaine, *How I Delivered the Goods*, Fortune Small Bus., Oct. 1, 2002, at 28, *available at* http://money.cnn.com/magazines/fsb/fsb_archive/2002/10/01/330568/index.htm. (describing Federal Express' first-mover advantages).

Patent monopolies are equally unnecessary for many service-driven Internet companies such as Google, Twitter, YouTube, and MySpace. These companies have few, if any, patents and almost never enforce them. Yet they command significant market shares through their first-mover statuses, innovation-driven cultures, and emphasis on customer service and loyalty. *See* Sara Kehaulani Goo, *Building a 'Googley' Workforce*, Washington Post Online, Oct. 21, 2006, http://www.washingtonpost.com/wp-dyn/content/article/2006/10/20/AR2006102001461.html.

In addition to first-mover advantages, business and service industries can use complementary assets to secure their market positions and recoup their investment. Lawyers who provide high quality services to clients may also attract those clients when additional matters such as litigation arise. A good doctor will attract the family and friends of patients. A good plumber will attract repeat business for additional household problems. These business advantages—and the innovation and quality required to maintain them—are based on loyalty and reputation, not patent incentives. *See* Pamela Samuelson, *What Effects Do Legal Rules Have on Service Innovation?*, *in Handbook of Service Science* (P.P. Maglio, C.A. Kieliszewski & J. Spohrer, eds., 2009), *available at* http://ssrn.com/abstract=1421946; *Hearing on Issues Relating to the Patenting of Tax Advice Before the Subcomm. On Select Revenue Measures of the H. Comm. on Ways & Means*, 109th Congress (2006) (statement of Ellen Aprill, Professor of Law, & John E. Anderson Chair of Tax Law, Loyola Law School, Los Angeles, California) (noting that existing economic incentives for tax planning already provide amble inducement for the development, promotion, and implementation of new strategies).

Other non-patent incentives for innovation in the business and service industries include ongoing professional development and expertise (e.g., the more one performs and improves one's service, the higher quality performance one offers) and customization (e.g., solving a particular client's problem often provides information on the client that competitors lack). *See* Robert P. Merges, *The Uninvited Guest: Patents on Wall Street* ("*Uninvited Guest*") 10-11 (Univ. Cal. Berkeley Publ. Law & Legal Theory Res. Paper Series, Paper No. 126, 2003), *available at* http://ssrn.com/abstract=410900 (citing Tufano, *supra*, at 235 (reporting a banker's view that innovation is the best way to advertise expertise) and Michael Polanyi, *The Tacit Dimension* (1967) (discussing the highly detailed, often context-specific knowledge actually required to do a complex job well)).

Rather than the repetition of identical items, which is characteristic of manufacturing and quite vulnerable to copying, it is these individualized qualities of the service marketplace that provide competitive advantage. *See* Conrad Lashley, *Towards an Understanding of Employee Empowerment in Hospitality Services*, 7 Int'l J. Contemp. Hosp. Mgmt. 27, 27-32 (1995); Frances X. Frei, *Breaking the Trade-Off Between Efficiency and Service*, Harv. Bus. Rev., Nov. 2006, at 93, 93-101. Put another way, the provision of services cannot be duplicated in the same way that a product or device can be copied; thus, the classic free-riding problem in patent-intensive industries is avoided. *See Uninvited Guest*, *supra*, (citing Robin Cowan, Paul A. David & Dominique Foray, *The Explicit Economics of Knowledge Codification and Tacitness*, 9 Indus. & Corp. Change 211, 211-53 (2000) (noting that customized knowledge is difficult to codify and even harder to transfer from one person to another)).

The potential perils of patent protection in the context of financial innovation are particularly ominous. As noted above, a chief driver behind financial innovation is to make profits through perfect or near-perfect arbitrage. In other words, by repackaging and restructuring existing financial assets in new forms or combinations, arbitragers can take advantage of price discrepancies between two otherwise equivalent bundles of assets. Arbitrage is a fundamental activity in financial markets. Moreover, it is one that has been quite active since at least the middle ages, when Venetian bankers were able to exploit regional differences in gold/silver exchange rates to turn a considerable profit. *See* Ivo Welch, *Corporate Finance: An Introduction* 248 (2008). Because arbitrage activities offer short-term profits that are often close to risk-free, such activities do not need the decades-long protection of patents to incentivize their innovation and use.

Moreover, the activities of quick-acting arbitrageurs are critical to efficiency and price discovery in financial markets. Virtually every accepted technique within financial engineering for valuing financial assets, from the Capital Asset Pricing Model to Arbitrage Pricing Theory to the Black Scholes options pricing formula depend critically on the existence of arbitrageurs who will identify and quickly dissipate arbitrage opportunities. *See, e.g.*, Mark Grinblatt & Sheridan Titman, *Financial Markets and Corporate Strategy* 230-31 (2nd ed. 2002) (discussing the critical role of arbitrage in financial derivatives pricing).

Viewed in this light, the effects of allowing patent protection for investment strategies such as the one here are plain. By its very nature, patent protection allows a patentee to delay her activities of profit extraction, unafraid of competition by others. In an arbitrage context, this implies that a patentee arbitrageur may decide to "milk" her strategy for many months, years, or even decades, and her property right to exclude others from the same strategy will induce her arbitrage position to become relatively gradual. Extending this across all (or even many) financial innovators, the repercussions for financial market efficiency are potentially severe: market efficiency, price discovery, and the viability of benchmark valuation models in finance will be compromised by a system that induces a dampened, attenuated, and ultimately unproductive system of arbitrage.

B. By their nature, non-technological business and service innovators do not need patent incentives because they have less intensive R&D costs than technological innovators

Patents should only be granted to those inventions "which would not be disclosed or devised but for the inducement of a patent." *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 11 (1966). The high R&D costs of technology innovation, coupled with low costs of copying, are a major reason why patent incentives help to promote innovation in technology-intensive industries. *See* James Bessen & Michael J. Meurer, *Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovators at Risk* ("*Patent Failure*") 216 (2008).

Business and service innovations, however, do not typically require the substantial up-front investments—e.g., engineering teams, R&D labs, expensive equipment, and/or clinical trials—that undergird the perceived need for patent protection in manufacturing innovations. *See* Andrew A. Schwartz, *The Patent Office Meets the Poison Pill: Why Legal Methods Cannot be Patented*, 20 Harv. J.L. & Tech. 333, 369 (2007) (noting "[t]here is no need to buy or build expensive machinery or run tests on prototypes" in service professions like the practice of law). Without high up-front costs to recoup, there is simply less need to protect service innovations with patents. Low R&D costs also allow innovators to recoup their investments more quickly without the need of twenty years of patent protection.

C. Non-technological innovations in business and service disciplines are often more diffuse and collaborative and thus fall outside of the classic patent "reward" paradigm

In classic patent economics, we presume that the costs of innovation will be efficiently internalized within single firms or individuals and thus, those actors will need exclusive rights to encourage investment and recoup those costs. *Patent Failure*, *supra*, at 216. In most technological industries such as pharmaceutical, electronics, and manufacturing firms, single entities bear the full R&D costs of initial development, refinement, production, maintenance, and ongoing innovation. These R&D costs are typically passed on to consumers as part of the price of specific products, but consumers have typically played a very minimal and indirect role in the actual practice of research and development.

In service and business industries, however, such economics do not map easily or appropriately because innovation is often derived from collaboration with customers. Mary Jo Bittner et al., *Technology Infusion in Service Encounters*, 28 J. Acad. Marketing Sci. 138, 138-49 (2000). For example, professional services innovations are often discovered and developed on-site with clients at their place of business or as a result of a client's own innovative approaches to the problem the provider is helping to solve.

Even when the subject matter *is* technological, consumers frequently innovate new processes and then voluntarily transfer that knowledge back to the producers of the technology without patenting them and at no charge. *See* Jeroen P.J. de Jong & Eric von Hippel, *Measuring User Innovation in Dutch High Tech SMEs: Frequency, Nature, and Transfer to Producers* (MIT Sloan Sch. of Mgmt., Working Paper No. 4724-09, 2009), *available at* http://ssrn.com/abstract=1352496; Fred Gault & Eric A. Von Hippel, *The Prevalence of User Innovation and Free Innovation Transfers: Implications for Statistical Indicators and Innovation Policy* (MIT Sloan Research Paper No. 4722-09, 2009), *available at* http://ssrn.com/abstract=1337232. *See also* Yochai Benkler, *Coase's Penguin, or, Linux and the Nature of the Firm*, 112 Yale L. J. 369 (2002); Eric von Hippel, *The Sources of Innovation* (1988).

Thus, granting patents for business and service innovation fails to allocate rewards appropriately and potentially bars some user-innovators from practicing the very methods they underwrote or to which they contributed.

D. Extending patent protection to non-technological methods in business and services would disrupt settled expectations and impose substantial additional costs on innovators and investors

Setting aside their lack of necessity and inapplicability, patents for non-technological methods would also actively hurt innovation and disrupt settled expectations. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 739 (2002). As this Court has wisely observed, "[t]he balance between the interest in motivating innovation and enlightenment by rewarding invention with patent protection on the one hand, and the interest in avoiding monopolies that unnecessarily stifle competition on the other, has been a feature of the federal patent laws since their inception." *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 63 (1998). Despite the Federal Circuit's pronouncements, this Court has never endorsed patenting for non-technological processes. Extending exclusive rights in these areas would not only unsettle expectations but also tip the patent balance away from innovation and toward stifling competition.

1. Small businesses, individual entrepreneurs, and start-up companies would face new and potentially insurmountable barriers to entry if non-technological methods were patentable

Business and service industries attract a high proportion of individual entrepreneurs, small businesses, and other so-called "startups." *See* U.S. Small Bus. Admin. ("SBA"), *The Small Business Economy: A Report to the President*, 20-21 tbl. 1.3 (2009) (showing 41.88 percent of new financial services are small businesses and 43.88 percent of new professional and business services are small businesses). *See also* Robert W. Fairlie, *Kauffman Foundation Index of Entrepreneurial Activity: 1996-2009* (2009) (noting that the entrepreneurial activity rate – the percentage of American non-business-owning adults who start a business each month – increased slightly in 2008 over 2007). These entrepreneurs already face disproportional regulatory costs that inhibit their advancement in the marketplace vis-à-vis larger firms. *See* W. Mark Crain, *The Impact of Regulatory Costs on Small Firms* (2005), *available at* http://www.sba.gov/advo/research/rs264tot.pdf. Imposing a new layer of significant additional costs for patent searches, legal counsel, litigation defense, and license negotiation would further drain their resources, potentially deterring investment and entry.

Moreover, if the PTO is permitted to grant broad business and service process patents, small start-up businesses would face an entirely new regime of business regulation – essentially requiring businesses to request private permits to operate from their competitors who have patents, independent of whatever technology the new business uses to compete.

2. Follow-on innovators would likely have to divert current R&D funding into defensive patenting

One of the key components of thriving industries is the ability to advance the state of the art through follow-on innovation. In an ideal marketplace, one firm would discover an innovative aspect of the business and others would follow, experimenting and modifying the original method or product to find other advances. *See* Chairman Alan Greenspan, Remarks at the 2003 Financial Markets Conference of the Federal Reserve Bank of Atlanta (April 4, 2003), *available at* http://www.federalreserve.gov/BoardDocs/speeches/2003/20030404/default.htm.

In technological industries, follow-on innovation is often impeded by a plethora of pre-existing patents. In patent-intensive industries, firms often develop large patent portfolios in order to navigate the so-called "patent thickets." Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard-Setting* (Mar. 2001), *available at* http://ssrn.com/abstract=273550. While this often leads to market inefficiencies, many technology industries have adapted reasonably well to the existence of patent thickets in their fields because they must already invest in patents in order to offset the significant R&D costs they are incurring.

In traditionally patent-free industries, however, this is not the case. There, firms have traditionally not sought or obtained patent protection. Therefore, if non-technological method patents should become a permanent part of the business and service industry landscape, as had begun to be the case in the aftermath of *State Street*, and firms continue to acquire patents on these methods, competing firms and new market entrants will have no choice but to develop defensive patent portfolios and blocking patents of their own in order to avoid the potentially catastrophic risk of injunctions on their primary business models. *See, e.g.*, *NTP, Inc. v. Research in Motion, Ltd.*, No. 3:01CV767, 2003 U.S. Dist. LEXIS 26837, at *3 (E.D. Va. Aug. 5, 2003) (staying permanent injunction of RIM's Blackberry Wireless Email Service pending appeal due in part to a "demonstrated and increasing use" by the public); *Patent Failure*, *supra*, at 176 (noting evidence of large incumbents using patent injunctions anticompetitively as a means of discouraging entry by small inventors). Ironically, in order to acquire these patents, business and service firms would have to divert resources away from their R&D budgets in order to pay legal fees and PTO fees, thereby potentially reducing innovation in their fields. *See Berkeley Survey*, *supra*, at 44 (noting that many startups, even in technology sectors, do not file patents because of their high cost). All of this goes against the current settled expectations of innovators and investors in these fields.

III. Reinforcing the long-standing technological limit on § 101 processes would improve judicial and administrative efficiency

Reinforcing the traditional view of § 101 will also help the PTO and the courts to use public resources more appropriately. Whether a claim qualifies as patentable subject matter under § 101 is a "threshold inquiry" and any claiming that fails to meet the requirements of § 101 must be rejected, even if it meets all other legal requirements of patentability. *See Diehr*, 450 U.S. at 188. However, if the word "process" in § 101 were construed so broadly as to cover all potential processes, technological or otherwise, this "threshold inquiry" would become superfluous. *See United States v. Blasius*, 397 F.2d 203, 207 n.9 (2d Cir. 1968) ("There is a presumption against construing a statute as containing superfluous or meaningless words or giving it a construction that would render it ineffective."). Moreover, both the PTO and the federal court system must be able to rely on § 101 in order to efficiently stem the tide of faulty applications and litigations that have flooded the patent system.

A. Strong § 101 limitations allow the PTO to efficiently reject non-technological patent applications

A technological § 101 standard gives the PTO a meaningful, efficient and predictable rule against which to test patent applications, at the threshold of the process, before significant costs are incurred. Every year, the PTO struggles to review and grant patents on appropriate inventions. The longer the PTO takes to review applications, the less protection and the fewer incentives are returned to innovators. *See Innovation Discontents, supra*, at 11. Since *State Street*, there has been a dramatic increase in the number of business and service method patent applications, adding to this problem. *See Fusco, supra*, at 108; Kevin M. Baird, *Business Method Patents: Chaos at the USPTO or Business as Usual?*, 2001 U. Ill. J.L. Tech. & Pol'y 347, 348 (2001) (noting backlog of business method applications at the USPTO). Therefore, not only do non-technological process patent applications threaten freedom to innovate, they also divert PTO resources away from legitimate applications in the traditional technological industries.

Issuing a § 101 rejection is among the easiest ways for the PTO to take action. *See Bilski*, 545 F.3d at 950 n.1 (noting that a PTO examiner may reject a claim solely on the basis of § 101 and independently of any other substantive requirement and suggesting that examiners first identify and reject claims on that basis). Unlike rejections under § 102 (lack of novelty) or § 103 (obviousness), § 101 determinations are made on the claim language alone and thus do not require extensive research into the state of the art or the details of other documents. This can save examiners significant research time and lead to faster rejections of non-technological applications.

Moreover, the PTO has a long history of hiring and training technologists to be patent examiners; to force it to hire bankers, arbitrators, charity fund-raisers, and storytellers to help examine the wide array of non-technological applications that Petitioners would allow would be both a waste of resources and outside of the competencies of the Office. *See* Josh Lerner, *Where Does State Street Lead? A First Look at Finance Patents, 1970-2000*, 57 J. Fin. 901, 902 (2002) (noting a surprising scarcity of relevant academic citations among the post-*State Street* business method application surge and suggesting this as a result of the PTO's lack of training and experience with non-technological processes). A meaningful § 101 standard takes advantage of the institutional competencies of the PTO, allowing it to easily reject non-technological applications, and focusing its resources on examining technological innovations to reward those innovators and reduce the current PTO backlog.

As an example of how such a standard would work, consider U.S. Patent Application No. 11/081866 (filed Mar. 15, 2006) (method of directing funds to a charity) in which the primary claim is:

A method of directing funds to a charity, comprising:

> receiving a first signal from a donor computer, the first signal including instructions, a request or advice indicating a desire to direct one or more payments to a donor-selected charity, at least a portion of the payment to be transferred from a giving account, the

> giving account having been established to hold funds for charitable gift-giving.

This is essentially a business method patent for charities. Under Petitioners' rule, this would clearly be patentable.

However, under a rule requiring patentable processes to be technological, this claim quickly fails. It is not a process for advancing the development, understanding, or application of a machine, a manufacture, or a composition of matter. Instead, much like Judge Rich's example of a diaper service, it merely uses technology (a donor computer) without promoting its progress. Under a robust technological § 101 standard, the PTO could easily and quickly reject this application and focus its resources on other applications of more merit.

Under a robust § 101 technological standard, the Bilski application fares no better. Bilski's method makes no claim to advance the development, understanding, or application of machines, manufactures, or compositions of matter. Nor would the mere addition of a machine make it technological. *See Benson*, 409 U.S. at 71-72 (rejecting claims even though capable of being carried out on a computer). No artful drafting would save it, and a strong technological § 101 standard would allow for easy disposition.

Nor would the method from *In re Comiskey*, 499 F.3d 1365 (Fed. Cir. 2007), survive. There, the applicant claimed a method and a system of mandatory arbitration for disputes arising from unilateral and contractual legal documents. *Id.* at 1368. Again, nothing present in the method attempts to advance the development, understanding, or application of machines, manufactures, or compositions of matter. Thus, it would be easily found unpatentable by the PTO. Merely implementing it on a machine (as Comiskey did in later claims) fails too because the technology employed is neither advanced nor even necessary to carry out the process, *id.* at 1379, and would merely be a field-of-use limitation. *See Flook*, 437 U.S. at 595.

B. Meaningful § 101 limitations allow courts to efficiently dismiss non-technological patent litigation

Beyond the PTO, a robust § 101 threshold would also empower courts to reject patent claims that were erroneously granted to improper subject matter. Much has been made of the avalanche of patent litigation in the federal court system, especially as it relates to so-called "patent trolls" – entities that acquire patents for rent-seeking but which do not actually produce products covered by the patent. *eBay*, 545 U.S. at 396 (Kennedy, J., concurring) ("An industry has developed in which firms use patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees."). These lawsuits are problematic because they are so costly. Rarely does one win or lose such cases on summary judgment. Parties often have little choice but to settle to avoid the cost of litigating through trial and possible appeal. *See Innovation Discontents*, *supra*, at 14.

Restoring § 101 as a substantive gatekeeper on inappropriate patent claims will allow at least some defendants who are fighting patent trolls and other suspect litigants to bring relatively straight-forward motions to dismiss and for summary judgment on § 101 issues. *See AT&T Corp. v. Excel Commc'ns, Inc.*, 172 F.3d 1352, 1355 (Fed. Cir. 1999) (noting, on appeal from a motion for summary judgment, that § 101 determinations are an issue of law). This could have a substantial effect on reducing unwarranted and inappropriate patent litigation in the federal court system. *Compare* John A. Allison & Mark R. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q.J. 185, 187, 208 tbl. 1 (1998) (finding that from 1989 through 1996, even before *State Street*, expansive subject matter doctrines resulted in less than 1% of patents being invalidated by courts for improper subject matter) *with CyberSource Corp. v. Retail Decisions, Inc.*, 620 F. Supp. 2d. 1068, 1081 (N.D. Cal. 2009) (ruling, after the *Bilski* en banc decision, that a business method patent was invalid subject matter on motion for summary judgment and observing that "[t]he closing bell may be ringing for business method patents[.]"), *Fort Props., Inc. v. Am. Master Lease, L.L.C.*, 609 F.Supp.2d 1052 (C.D.Cal. 2009) (holding a real estate business method patent invalid under *Bilski*'s machine-or-transformation test), *and Research Corp. Techs., Inc. v. Microsoft Corp.*, No. CV-01-658-TUC-RCJ, slip op. at 9 (D. Ariz. July 29, 2009) (holding two patents invalid on motion for summary judgment under *Bilski* 's machine-or-transformation test). A strong § 101 standard helps courts resolve these cases quickly and efficiently.

C. Congress, not the courts, is the proper institution to expand patentable subject matter

Finally, some argue that upholding the historically-grounded definition of "process" leaves out important areas of innovation from the world of patents. *Bilski*, 545 F.3d at 1011 (Rader, J., dissenting); *Id.* at 980-81 (Newman, J., dissenting). However, just as it is within the institutional competence of the PTO and the courts to protect innovation by using § 101's historic threshold, expansion of patentable subject matter is the institutional domain of Congress. *Diamond v. Chakrabarty*, 447 U.S. 303, 318 (1980); *Benson*, 409 U.S. at 73. Thus, should patentable subject matter need expansion, it is for Congress to undertake, not this Court.

CONCLUSION

In order to preserve the freedom to innovate and proper patent policy, the Court should affirm for the reasons stated above.

Respectfully submitted,

PAMELA SAMUELSON *Richard M. Sherman Distinguished Professor of Law & Information* UC Berkeley School of Law Berkeley, CA 94720-7200	JASON M. SCHULTZ *Counsel of Record* UC Berkeley School of Law Berkeley, CA 94720-7200 (510) 642-1957

Attorneys for Amici Curiae

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BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Respondent

ON A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF *AMICI CURIAE* ENTREPRENEURIAL SOFTWARE COMPANIES IN SUPPORT OF PETITIONER

ROBERT GREENE STERNE
Counsel of Record
MICHAEL D. SPECHT
MICHELLE K. HOLOUBEK
PETER ALEXANDER SOCARRAS
STERNE, KESSLER,
GOLDSTEIN & FOX P.L.L.C.
1100 New York Avenue, NW
Washington, DC 20005
(202) 772-8555

August 6, 2009

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Interest of the *Amici*

This brief is filed with the consent of the parties[1] on behalf of Armanta; Asentinel, LLC; CyberSource Corp.; and Hooked Wireless, Inc.

Armanta develops specialized software to automate its clients' business processes. Armanta's software tools are designed for the finance, health science, and telecommunications industries, and facilitate clients' data management requirements. Armanta protects its innovative software and its research and development (R&D) investment through patent protection. Armanta currently has at least three pending U.S. patent applications.

Asentinel, LLC has developed innovative telecommunications expense management (TEM) software. Its TEM software addresses the complex task of processing and auditing telecommunications invoices. Their TEM software has saved its customers millions of dollars by streamlining invoice analysis and management. To protect its innovative software, Asentinel currently has at least one U.S. patent and at least two pending U.S. patent applications.

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[1] The parties' blanket letters of consent have been filed with the Clerk in compliance with Rule 37.3. This brief was not authored in whole or in part by counsel for any party. No person or entity other than the *amici* made a monetary contribution to the preparation or submission of this brief.

CyberSource Corp. is an e-commerce payment management company. CyberSource has developed innovative software to facilitate secure payment transactions over the Internet. Understanding that security is the cornerstone of e-commerce, CyberSource continues to develop software to identify and evaluate fraudulent activity and aid e-commerce transactions. CyberSource protects its R&D investment with a patent portfolio including at least eight U.S. patents and at least two pending U.S. patent applications.

Hooked Wireless, Inc. creates graphic technology for mobile devices; including cell phones, music players, and other portable electronics. Hooked Wireless relies on its intellectual property as an asset in the hyper-competitive mobile device industry. Hooked Wireless currently has at least one pending U.S. patent application.

Summary of Argument

Small- to mid-size entrepreneurial software companies represent a considerable portion of U.S. innovation and have significant impact on U.S. global competitiveness. These same companies are being harmed by the overly-narrow, inflexible definition of statutory subject matter outlined by the U.S. Court of Appeals for the Federal Circuit in its decision in *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008).

This Court has long proffered a broad view of patent-eligible subject matter. Without any corresponding change in this Court's precedent, the

Federal Circuit has instigated an overly-narrow and limiting test, by which all types of innovation must be evaluated. As a result, many valuable software-related inventions are being left without adequate patent protection.

The inability to appropriately protect software-related innovation is crippling the ability of small- and mid-size entrepreneurial software businesses to compete in the market against more-established companies. Uncertainty caused by the current legal landscape, and the overly-broad application of the machine-or-transformation test, is causing these software companies to lose significant value due to depreciation of their existing patents and patent potential. Furthermore, small- and mid-size software companies are being particularly harmed by the overbearing increase in unpredictability and costs of patent prosecution and enforcement.

Even if the Federal Circuit did not intend for its machine-or-transformation test to be applied to any statutory classes other than methods, the U.S. Patent and Trademark Office and various district courts are extending the test to all statutory classes of innovation. Additionally, there is great inconsistency among the adjudicative bodies regarding the interpretation of the machine-or-transformation test. This Court should recognize its own precedent and maintain a broad view of statutory subject matter, and strike down the rigid machine-or-transformation test, or at the very least indicate clearly that this test does not apply to software patents.

Argument

I. Constraints on patenting software-related inventions are harmful to small- and mid-size software innovators

A. Software companies provide a considerable portion of the United States' innovation and play a significant role in the U.S. economy

The U.S. economy is continually moving away from a "manufacturing" economy and toward a services and information economy. As such, companies that develop software to implement services and manage data are playing an increasingly important role in the U.S. economy. Such companies innovate in the form of intangible ideas, rather than physical objects. Consequently, promoting further innovation and protection of "intangible ideas" through the U.S. patent system is of critical importance to the U.S. economy.

In 2008, the value added to the United States' gross domestic product (GDP) by "information communications technology producing" industries was $535.7 billion, or 3.8% of the entire GDP.[2] Indeed, about 50,000 companies are involved in computer software development alone in the United States, with combined annual revenue of about $180 billion.[3] In 2008 alone, nearly 10% of all patents issued to U.S. companies were related to data processing.[4] These numbers, relative to other individual industries, are significant and show that software companies are major contributors to the

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[2] "Information communications technology producing" industries are defined by the Bureau of Economic Analysis as the following industries: computer and electronic products, publishing industries (including software), information and data processing services, and computer systems design and related services. *See* Annual Report on Gross Domestic Product by Industry Account Produced by the U.S. Department of Commerce Bureau of Economic Analysis, http://www.bea.gov/industry/gpotables/gpo_action.cfm (April 28, 2009).

[3] Hoovers collects information and provides data on over 43,000 companies in 600 different industries. *See* Industry Overview: Computer Software Development, *at* http://www.hoovers.com/computer-software-development/--ID__88--/free-ind-fr-profile-basic.xhtml (last visited August 2, 2009).

[4] The U.S. Patent Office has identified classes 700-707 and 715-717 as "data processing" classes. In 2008, 7412 patents issued to U.S. companies that were listed in one of the data processing classes as the primary classification. A total of 77,501 patents were issued to U.S. companies by the USPTO, meaning that 9.56% of patents issued to U.S. companies were classified in the data processing classes. *See* 2008 Report on Patenting in Technology Classes, breakout by Geographic Origin, produced by the U.S. Patent and Trademark Office Electronic Information Products Division Patent Technology Monitoring Team, http://www.uspto.gov/web/offices/ac/ido/oeip/taf/tecstc/clstc_gd.htm (last visited July 30, 2009).

U.S. economy. Any change in patent law or policy that negatively impacts the software industry would have a corresponding, and considerable, negative effect on the U.S. economy.

B. Current legal uncertainty is causing entrepreneurial software companies to lose significant value due to depreciation of their existing intellectual property and intellectual property potential

Industry leaders and venture capitalists in the multi-billion dollar software industry are less likely to invest and take risks in unpatented technology developments. Investors recognize that they are often unlikely to reap the full benefit of their investment when technology is unprotected and competitors can enter the market with minimal research and development costs. Patent protection has been a most (and sometimes the only) effective blockade against such egregious copy-cat behavior.

Software innovation can often be easily reverse-engineered once a product is launched into the marketplace. Under current law, software innovation can often only be effectively protected against reverse engineering through patents. Without appropriate legal protection, software-based innovation will be less attractive as an asset class and will represent a more speculative and less-valued investment. Indeed, studies show a direct correlation between the patent portfolio held by an emerging software company and the likelihood that the software company will obtain funding from venture capitalists and other investors.[5]

Without adequate patent protection, small- and mid-size software companies such as those represented by the *amici* would have reduced investment, and accordingly reduced incentive to innovate and take costly risks. Put simply, decreased patent protection will mean less investment and innovation in the software industry. As a real-world proof of this concept, it has been determined that a 10% decrease in a company's patent premium corresponds to a 7% decrease in research and development.[6] In contrast, an increased reliance on patent protection in the late-1990s was shown to correlate significantly with sales growth, increased number of employees, and increased market capitalization in the software industry.[7]

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[5] *See, e.g.*, Iain M. Cockburn & Megan J. MacGarvie, *Patents, Thickets, and the Financing of Early-Stage Firms: Evidence from the Software Industry* 9 (Boston Univ. and Nat'l Bureau of Econ. Research, Working Paper No. 13644, 2007), http://www.nber.org/chapters/c3050.pdf; Ronald Mann & Tom Sager, *Patents, Venture Capital, and Software Start-ups* (Am. Law & Econ. Ass'n Annual Meetings, Working Paper No. 62, 2006), http://law.bepress.com/alea/16th/art62; Ronald J. Mann, *Do Patents Facilitate Financing in the Software Industry?*, 83 Tex. L. Rev. 961 (2005).

[6] The patent premium is "the value that an innovator gains from use of the patent to protect the innovation against imitation. In other words, the patent premium is the value difference between Technology A with a patent and Technology A without a patent." Scott Shane, *The Likely Adverse Effects of an Apportionment-Centric System of Patent Damages* 4, (Jan. 14, 2009), http://www.mfgpatentpolicy.org/images/Apportionment _of_Damages_Adverse_Effects_Jan14_09.pdf.

A legal landscape that restricts patenting of software-related inventions not only affects future innovation, but also has a negative impact on the companies owning software-related patents that issued under the pre-*Bilski* landscape. A recent study has put the average value of a U.S. patent at between $93,463 and $118,988 (in 2008 dollars).[8] While significant, these averages understate the value of software patents that may be core to a company's business and competitive posture. Such patents may be worth tens or even hundreds of millions of dollars. When it is considered that patents are responsible for approximately 22.5% of an average company's value[9], it follows that the reduction of a small- to mid-size software company's patent portfolio to a near-zero value would be devastating to its bottom line. Plus, the entry of competitors who can appropriate a company's innovation with minimal research and development expense could slash the innovative company's profit margin—delivering a likely death blow to the company that invests significant time and money into research and development. Such a legal landscape encourages the software copy-cat and punishes the software innovator.

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[7] Josh Lerner & Feng Zhu, *What is the Impact of Software Patent Shifts?: Evidence from* Lotus v. Borland 21-22 (Nat'l Bureau of Econ. Research, Working Paper No. 11168, 2005), http://www.nber.org/papers/w11168.

[8] Shane, *supra* note 6.

[9] James E. Malackowski & Jonathan Barney, *Patent Attribution to Equity Returns*, (Jan. 6, 2009), http://www.oceantomo.com/PDFs/Patent_Attribution_to_Equity_Returns_1-6-09.pdf.

C. Inability to patent software innovation cripples the ability of small- and mid-size entrepreneurial software businesses to compete in the market against established companies.

For the companies represented in the *amici* group, software development is at the core of their businesses. Protection of that development is essential to obtaining and maintaining a competitive advantage, whether through obtaining funding or gaining market access through licensing of their developments. As found by Ronald J. Mann in his empirical studies on whether patents facilitate financing in the software industry:

> Contrary to the perception that patents tilt the playing field in favor of large incumbent firms to the disadvantage of small firms, patents in this context afford a unique opportunity to the small startup. The patent system grants the small firm an automatic stay of competitive activity that remains in force long enough for the firm to attempt to develop its technology.

Ronald J. Mann, *Do Patents Facilitate Financing in the Software Industry?*, 83 Tex. L. Rev. 961, 986 (2005). Mann further highlights the reasons why patents may actually be more important to small software companies than large, established companies:

> For large firms, the marginal increase in appropriability that comes from patents may have little benefit: IBM could compete quite successfully against smaller firms even if it did not have patents protecting its product from copycat competitors. For the smaller firm, however, the ability of the implicit threat of patent litigation to prevent incumbents like IBM and Microsoft from taking its technology can be the difference between life and death.

Id. at 986-987. In fact, empirical evidence shows that, all other things being equal, companies holding software patents associated with a market are three times more likely to enter that market, and 36% less likely to exit the market after entry.[10]

Additionally, the value of patent-protected processes is increasingly being manifested and extracted through joint venture licensing, or other business arrangements, where intellectual property transfer creates additional business opportunities and revenue streams.[11] Small software companies often collaborate with third parties for the commercial development of their technologies and access to new technologies essential to remain competitive. Devaluation of a company's intellectual property places that company at a disadvantage in license negotiations with third parties and prohibits growth of that company. Devaluation of an entire industry's intellectual property results in severe checks on joint ventures and technology transfers, and inhibits entry of small- and mid-size, singularly-focused (i.e., "niche") companies into the marketplace.

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[10] Iain M. Cockburn & Megan MacGarvie, *Entry, Exit, and Patenting in the Software Industry* 34 (Nat'l Bureau of Econ. Research, Working Paper No. 12563, 2006), http://www.nber.org/papers/w12563.

Some parties in opposition to software patents claim that software patents hinder innovation. They argue that "[o]pen source software developers constantly face the hazard that the original code they have written in good faith might be deemed to infringe an existing software patent." Brief of *Amicus Curiae* Red Hat, Inc. in Support of Appellee at vi, *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (No. 2007-1130). This hazard cannot be avoided, they argue, because there are a large number of software patents that "cannot possibly be searched and cleared at reasonable cost." *Id.* They thus conclude that software patents should, as a class, be eliminated from patent-eligibility.

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[11] In the security software industry, the commercial success of start-ups is in large part due to their ability to license technology to incumbent firms downstream having large product portfolios. Alfonso Gambardella & Marco S. Giarratana, *Innovations for Products, Innovations for Licensing: Patents and Downstream Assets in the Software Security Industry* (Oct. 10, 2006), http://ssrn.com/abstract=935210.

While eliminating software patents would certainly remove any perceived barrier to the open source effort, the existence of a large number of prior art patents is problematic for any company producing goods in any field - yet there is no real argument that patents covering, for example, a diesel engine should be invalidated as non-statutory simply because others wish to participate in the diesel engine market. Software should not be singled out as somehow different from older, established forms of innovation, simply because it is a relatively new and exciting industry in which many companies wish to participate.[12] The implementation of the invention in software versus hardware indeed is often a mere design choice and in no way reflects the underlying innovation. Such discrimination of software compared to hardware and other brick-and-mortar goods is arbitrary and contrary to promoting the progress of useful arts, as dictated by Art. I, §. 8, cl. 8 of the U.S. Constitution. Indeed, if we are to increase innovation in and growth of the information economy, we cannot shortsightedly set our legal framework so as to leave the work product of an entire industry unprotected.

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[12] Further, empirical evidence suggests that there is no correlation whatsoever between increased reliance on patent protection and any apparent decrease in innovation in the software industry. Lerner & Zhu, *supra* note 7, at 22.

D. The current approach of determining patent-eligible subject matter harms small- and mid-size software companies by increasing the unpredictability and costs of prosecution and enforcement

The number of rejections under 35 U.S.C. § 101 being affirmed by the United States Patent and Trademark Office (USPTO) Board of Patent Appeals and Interferences (BPAI) using the rigid machine-or-transformation test has dramatically increased since the U.S. Court of Appeals for the Federal Circuit (Federal Circuit) decision in *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008).[13] Also increasing are the number of *sua sponte* rejections under § 101 raised by the BPAI.[14] Prior to the use of the machine-or-transformation test by the USPTO[15], it was uncommon in the software and electrical arts for rejections to be raised under § 101. Now that the examining corps has been emboldened by the Federal Circuit's adoption of the machine-or-transformation test, rejections under § 101 have radically increased. The unexpected jump in such rejections, under an interpretation of § 101 that was not anticipated at the time of application filing, has wreaked havoc on software patent applications filed pre-*Bilski*, increasing prosecution costs and delaying (or blocking) issuance of software patents.

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[13] Michael Messinger *et al.*, *BPAI Reaches Beyond Bilski to Machines*, Intellectual Property Today, March 3, 2009, at 1, *available at*
http://www.iptoday.com/news-article.asp?id=3622&type=ip.

[14] *Id.*

[15] Although the Federal Circuit's decision in *Bilski* was not issued until Oct. 30, 2008, the USPTO began using the machine-or-transformation test to reject claims under § 101 as early as May 15, 2008. On May 15, 2008, John J. Love, the Deputy Commissioner for Patent Examination Policy at the time, circulated a memorandum entitled "Clarification of 'Processes' under 35 USC § 101." In the memorandum, Dep. Comm. Love provided guidance that a § 101 process must (1) be tied to another statutory class or (2) transform underlying subject matter to a different state or thing. This test was later adopted by the Federal Circuit as the *Bilski* machine-or-transformation test.

As if that were not enough, the application of the machine-or-transformation test to patented and pending claims is inconsistent.[16] Such inconsistencies make prosecution inefficient and increasingly expensive for software innovators, whose claims are often targeted for issues under § 101. Because of the inconsistencies, lessons learned in addressing a § 101 rejection in one application cannot necessarily be applied to another application—rather, the learning process becomes a problematic continuous loop. These inefficiencies are passed down as costs to the software innovators and their backers, who must carefully shepherd each application through the patent system, encountering unpredictable, arbitrary obstacles at every turn. As a result, patent prosecution is becoming increasingly, and oftentimes prohibitively, expensive.

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[16] *Compare Ex parte Harris*, No. 2007-0325, 2009 WL 86719 (Bd. Pat. App. & Interf. Jan. 13, 2009) (finding that claims reciting a network and a server were not tied to a particular machine), *with Ex parte Kasper*, No. 2008-2297, 2009 WL 271857 (Bd. Pat. App. & Interf. Feb. 2, 2009) (finding claims reciting a network statutory), *and Ex parte Uceda-Sosa*, No. 2008-1632, 90 U.S.P.Q.2d 1625, 2008 WL 4950944 (Bd. Pat. App. & Interf. Nov. 18, 2008) (finding claims reciting a network statutory); *Compare Ex parte Cornea-Hasegan*, No. 2008-4742, 89 U.S.P.Q.2d 1557, 2009 WL 86725 (Bd. Pat. App. & Interf. Jan. 13, 2009) (finding a *Beauregard*-style claim non-statutory), *with Ex parte Li*, No. 2008-1213, 88 U.S.P.Q.2d 1695, 2008 WL 4828137 (Bd. Pat. App. & Interf. Nov. 6, 2008) (finding a *Beauregard*-style claim statutory).

Even if a software patent is granted by the USPTO, enforcement of that patent is becoming more expensive, with a less predictable result, due to the uncertainty in claim scope and validity resulting from the Federal Circuit's unnecessary line drawing. In one particularly pertinent example, CyberSource Corp., one of the *amici* represented herein, is the assignee of U.S. Patent No. 6,029,154 ("the '154 patent"). The '154 patent issued in February 2000, and was asserted by CyberSource in August 2004. The defendant in that case requested reexamination of the '154 patent in October 2004. The USPTO examined the '154 patent a second time, and in July 2008 issued a reexamination certificate.[17] Despite being twice considered and approved by the USPTO, the District Court in the related litigation held the patent invalid as failing the machine-or-transformation test outlined in *Bilski*. *CyberSource Corp. v. Retail Decisions, Inc.*, No. 04-03268, 2009 WL 815448, at *7 (N.D. Cal. Mar. 27, 2009).

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[17] Although the reexamination certificate was issued prior to the Federal Court's decision in *In re Bilski*, the USPTO was already applying the machine-or-transformation test to pending applications, pursuant to Dep. Comm. Love's memorandum of May 15, 2008. Although the claims of the '154 patent were amended during reexamination, a rejection under § 101 was not raised by the examiner.

CyberSource has therefore been forced to incur significant and unexpected expense in the procurement and enforcement of its patent rights only to find itself the victim of inconsistent and unpredictable interpretations of the machine-or-transformation test.

Although expenses such as those described above may be easily absorbed by some larger corporations, small- to mid-size companies and individual inventors do not always have this ability. Instead, they are often forced to decide between spending precious funds protecting their prior innovations or investing in new innovation. Such do-or-die practices do not foster a sustainable growth economy for the small business sector.

A broad interpretation of statutory subject matter is favored by the *amici*, as it removes the uncertainty and cost associated with frequent, inconsistent applications of 35 U.S.C. § 101 while leaving sufficient tools, such as 35 U.S.C. §§ 102, 103, and 112 to address overly-broad, uninventive, or poorly defined patent claims.

II. Even if the Federal Circuit did not intend the machine-or-transformation test to affect software patents, software patents are negatively impacted by the BPAI's and district courts' interpretations of that test

The Federal Circuit appeared to have carved out software claims as being specifically unaffected by its decision in *In re Bilski*, stating:

> Therefore, although invited to do so by several *amici*, we decline to adopt a broad exclusion over software or any other such category of subject matter beyond the exclusion of claims drawn to fundamental principles set forth by the Supreme Court. (citation omitted.) We also note that the process claim at issue in this appeal is not, in any event, a software claim. Thus, the facts here would be largely unhelpful in illuminating the distinctions between those software claims that are patent-eligible and those that are not.

In re Bilski, 545 F.3d at 960, fn. 23. The Federal Circuit further stated:

> We leave to future cases the elaboration of the precise contours of machine implementation, as well as the answers to the particular questions, such as whether or when recitation of a computer suffices to tie a process claim to a particular machine.

Id. at 962. Nonetheless, the BPAI and the USPTO examining corps have taken an aggressive and all-encompassing position regarding the machine-or-transformation test, and have applied the test inflexibly to a large number of software and electronics applications. For instance, the machine-or-transformation test has been used to eliminate not only abstract method claims, but also method and apparatus claims reciting servers, server-client systems, databases, processors coupled to floating point hardware, displays, and computer program products.[18]

As an example, the BPAI found in *Ex Parte Halligan,* No. 2008-1588, 89 U.S.P.Q.2d 1355, 2008 WL 4998541 (Bd. Pat. App. & Interf. Nov. 24, 2008) that reciting "a programmed computer method" in a method claim was an attempt to circumvent § 101 by "limit[ing] the use of the formula to a particular technological environment." *Ex parte Halligan,* 2008 WL 4998541, at *13 (quoting *Diamond v. Diehr*, 450 U.S. 175, 191-92 (1981)). Similarly, in *Ex parte Cornea-Hasegan,* No. 2008-4742, 89 U.S.P.Q.2d 1557, 2009 WL 86725 (Bd. Pat. App. & Interf. Jan. 13, 2009), the BPAI deemed that a method reciting a "processor" using "floating-point hardware" was not tied to a particular machine. The BPAI in *Ex parte Harris,* No. 2007-0325, 2009 WL 86719 (Bd. Pat. App. & Interf. Jan. 13, 2009) determined that claims reciting "a network," and "a server" were not statutory, as they could potentially be embodied in only human activity, and went so far as to say that the claims would not be statutory even if the components were construed as electronic. *Ex parte Harris,* 2009 WL 86719, at *2, *9. In *Ex parte Koo,* No. 2008-1344, 2008 WL 5054161 (Bd. Pat. App. & Interf. Nov. 26, 2008), the BPAI found that a claim reciting a relational database management system was not tied to a particular machine.

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[18] The *amici* herein struggle to understand how a claim to a machine or product that performs a particular task can be considered not sufficiently tied to a particular machine.

The status of computer program product claims, often called "*Beauregard* claims" after the Federal Circuit's decision in *In re Beauregard*, 53 F.3d 1583 (Fed. Cir. 1995), that confirmed the patentability of certain software inventions, is also uncertain. When confronted at the Federal Circuit in 1995, the USPTO conceded that "computer programs embodied in a tangible medium, such as floppy diskettes, are patentable subject matter" and agreed that "the printed matter doctrine is not applicable." *In re Beauregard*, 53 F.3d at 1583. Recently, however, the BPAI has at least four times rejected *Beauregard* claims as non-statutory under the machine-or-transformation test.[19] In short, whether a *Beauregard* claim will survive at the BPAI is unknown.

Post-*Bilski*, the BPAI has also applied an overly-aggressive interpretation to the transformation prong of the machine-or-transformation test, such that the transformation of generic data or data unrelated to real-world physical objects is not sufficient to impart patent eligibility. For example, the BPAI in *Ex parte Gutta*, No. 2008-3000, 2009 WL 112393 (Bd. Pat. App. & Interf. Jan. 15, 2009) determined that only generic data was transformed in a processor-based method for recommending items to a user based on a modified history of the user's prior selections. Because the data represented electronic user histories rather than a physical or tangible object, the claim failed the transformation prong.[20] Similarly, in *Halligan*, *Harris*, and *Cornea-Hasegan*, data representing trade secrets, bids, and floating point numbers, respectively, were deemed intangible.[21] Of note, however, *Cornea-Hasegan*'s step of determining whether to calculate a number using floating-point hardware was deemed insignificant extra-solution activity.[22]

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[19] *See Ex parte Cornea-Hasegan, supra* note 17; *Ex parte Langemyr*, No. 2008-1495, 89 U.S.P.Q.2d 1988, 2008 WL 5206740 (Bd. Pat. App. & Interf. May 28, 2008) (decided before the holding in *In re Bilski* but nonetheless used the machine-or-transformation test); *Ex parte Uceda-Sosa, supra* note 17; *Ex parte Kirshenbaum*, No. 2007-3223, 2008 WL 867774 (Bd. Pat. App. & Interf. Mar. 31, 2008).

Other BPAI cases, such as *Ex parte Godwin*, No. 2008-0130, 90 U.S.P.Q.2d 1326, 2008 WL 4898213 (Bd. Pat. App. & Interf. Nov. 13, 2008) and *Ex parte Noguchi*, No. 2008-1231, 90 U.S.P.Q.2d 1379, 2008 WL 4968270 (Bd. Pat. App. & Interf. Nov. 20, 2008) have recited a harsher rule: the transformation of data—without limit—is insufficient to satisfy the transformation prong.[23] In *Noguchi*, the method claim was directed to inspecting a request message for a code, analyzing the code, and determining whether to transmit based on the code analysis. In *Godwin*, the claim was directed to rendering a web page portal view by loading a style sheet, mapping attributes, parsing logic, replacing attributes, and compiling logic for use in producing a view. As in *Gutta*, the data was viewed as unrelated to tangible real-world objects, even though the methods producing the data provided real-world benefits.

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[20] The BPAI issued a rejection under § 101, *sua sponte*. *Ex parte Gutta*, 2009 WL 112393, at *3.

[21] *See Ex parte Halligan*, 2008 WL 4998541, at *13; *Ex parte Harris*, *supra* note 17, at *6; *Ex parte Cornea-Hasegan*, *supra* note 17, at *5.

[22] *Ex parte Cornea-Hasegan*, *supra* note 17, at *5.

[23] *See, e.g.*, *Ex parte Godwin*, 2008 WL 4898213, at *4; *Ex parte Noguchi*, 2008 WL 4968270, at *5.

The BPAI is not the only judicial body interpreting the machine-or-transformation test as applicable to software-related claims. Federal district courts are also applying their own spin to the bevy of decisions post-*Bilski*. In one notable example, the software-related claims of CyberSource Corp., one of the *amici* signing hereto, were deemed by the U.S. District Court for the Northern District of California as being directed to non-statutory subject matter. *Cybersource Corp. v. Retail Decisions, Inc.*, No. 04-03268, 2009 U.S. Dist. LEXIS 26056 (N.D. Cal. Mar. 26, 2009). The claims specifically dealt with a process for validating a card transaction over the Internet. Not only was the method claim held patent-ineligible, but the corresponding *Beauregard* claim to a computer readable medium was also deemed patent-ineligible for not satisfying either prong of the machine-or-transformation test.

The U.S. District Court for the Northern District of California dealt a death blow to another software-based invention when it deemed a claim reciting "a central processor...consisting of a specially programmed computer hardware and database," "a remote application entry and display device," and "a remote funding source terminal device" patent-ineligible as not being directed to a particular machine. *DealerTrack Inc. v. Huber*, No. CV 06-2335 AG (FMOx), 2009 WL 2020761, at *4 (C.D. Cal. July 7, 2009).

The U.S. District Court for the Middle District of Florida handed down a similar fate to a computer- and network-based system claim for payment distribution, holding that the recited system comprising a network and computer means was merely a non-statutory process in disguise. *Every Penny Counts, Inc. v. Bank of America Corp.*, No. 2:07-cv-042, 2009 U.S. Dist. LEXIS 53626 (M.D. Fla. May 27, 2009).

In a post-*Bilski* comment, Federal Circuit Judge Moore pointed out that the Federal Circuit in *Bilski* "went to great lengths in *Bilski* to clarify that the decision was limited to process claims, and further limited to process claims not involving a machine." *In re Comiskey*, 89 U.S.P.Q.2d 1641, 1650 (Fed. Cir. 2009) (Moore, J., dissenting) (citing *In re Bilski*, 545 F.3d 943, 951, 962 (Fed. Cir. 2008)). Nonetheless, the USPTO and district courts alike are using the *Bilski* decision to dispose of cases without having to address the purported invention on its merits.

III. This Court should recognize its own precedent and maintain a broad view of statutory subject matter

As this Court stated in *Diamond v. Chakrabarty*, 447 U.S. 303 (1980), "[e]verything under the sun that is made by man is patentable." 447 U.S. at 309 (quoting S. Rep. No. 82-1979 (1952)). The U.S. software industry has operated, indeed flourished, under the broad definition of statutory subject matter that was set out by this Court in

Diamond v. Chakrabarty and relied upon by the Federal Circuit in ***State Street Bank & Trust Co. v. Signature Fin. Group, Inc.***, 149 F.3d 1368 (Fed. Cir. 1998) and *AT&T Corp. v. Excel Commc'ns, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999). There is no need for the arbitrary rule resulting from the Federal Circuit's recently promulgated machine-or-transformation test, especially one that has such stifling ramifications beyond the apparent intent of the Federal Circuit. As asserted in Petitioner's brief on the merits, and as agreed with by *amici*, a method or process need not result in a physical transformation or be tied to a machine in order to constitute patent-eligible subject matter. (Br. for Pet'r at 20-28.).

However, should this Court determine that the machine-or-transformation test is an appropriate test applicable to all forms of innovation, *amici* would appreciate guidance on whether recitation of a computer or other tangible device suffices to tie a process claim to a particular machine. Such guidance would put to rest many of the uncertainties caused by the Federal Circuit's decision. In the decision below, the Federal Circuit stated:

> We leave to future cases the elaboration of the precise contours of machine implementation, as well as the answers to the particular questions, such as whether or when recitation of a computer suffices to tie a process claim to a particular machine.

In re Bilski, 545 F.3d at 962.

As discussed above, the uncertainty surrounding the Federal Circuit's comments causes unnecessary and significant confusion and inconsistency in current patent prosecution and enforcement. Should the machine-or-transformation test stand, *amici* support the position that an indication in a recited claim that the claimed method is performed on a computer or other tangible device or system is more than sufficient to tie a claimed process to a machine and result in patent-eligible subject matter, in accordance with the Federal Circuit's own precedent. *In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994) (holding that software converts a general purpose computer into a special purpose machine, and is patent-eligible when claimed as such). Recitation of such a tangible device removes the possibility that a given method claim would read on mental thoughts or human activity, and leaves the claim scope appropriately broad for innovation in the digital age. Such a recitation also does not prevent application of other requirements on statutory subject matter set out by this Court in prior precedent, such as the requirement that a claimed method must not preempt all practical implementations of the method. (*See, e.g.*, *Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972).)

Even without limiting the bounds of statutory subject matter, many of the concerns of those opposed to software patents (e.g., that they are overly-broad, not truly inventive, or confusing) can be addressed by proper application of the existing tools, namely 35 U.S.C. §§ 102, 103, and 112. There is no need to overly-restrict the scope of statutory subject matter, at the expense of the entire software industry, not to mention future, as yet unimaginable, industries, when the tools to achieve the desired result already exist.

Conclusion

For the reasons stated in Petitioner's Brief and this brief, the Court should reverse the judgment of the Court of Appeals for the Federal Circuit.

Respectfully submitted,

ROBERT GREENE STERNE
Counsel of Record
MICHAEL D. SPECHT
MICHELLE K. HOLOUBEK
PETER ALEXANDER SOCARRAS
STERNE, KESSLER,
GOLDSTEIN & FOX P.L.L.C.
1100 New York Avenue, NW
Washington, DC 20005
(202) 772-8555

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AMICUS CURIAE BRIEF

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IN THE
Supreme Court of the United States

BERNARD L. BILSKI, ET AL.,

PETITIONERS,

V.

JOHN J. DOLL, ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,

RESPONDENT.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF *AMICUS CURIAE* OF THE FEDERAL CIRCUIT BAR ASSOCIATION IN SUPPORT OF NEITHER PARTY

SCOTT M. MCCALEB
PRESIDENT
THE FEDERAL CIRCUIT BAR ASSOCIATION
1620 EYE ST., N.W.
SUITE 700
WASHINGTON, DC 20006
(202) 408-4000

JAMES F. MCKEOWN*
MICHAEL J. SONGER
CROWELL & MORING
1001 PENNSYLVANIA AVE., NW
WASHINGTON, DC 20004
(202) 624-2500
* *Counsel of Record*

Date: August 6, 2009

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INTEREST OF AMICUS CURIAE

The Federal Circuit Bar Association ("FCBA")[1] is a national bar organization with over 2,600 members from all geographic areas of the country, all of whom practice before or have an interest in the decisions of the Court of Appeals for the Federal Circuit. The FCBA offers a forum for discussion of common concerns between bar and Court, litigator and corporate counsel. One of the FCBA's purposes is to render assistance in appropriate instances, both in procedural and substantive practice areas, whenever the FCBA believes a contribution can be made. The FCBA believes this is such an instance.

Neither the decision to file this brief nor the views articulated in this brief are expressive of, or binding upon, those members of the Board of Governors of the Federal Circuit Bar Association who are employees of the Federal Government.

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[1] Pursuant to Supreme Court Rule 37.6, the FCBA states that no counsel for a party authored this brief in whole or in part, and that no person or entity, other than Amicus and its counsel, contributed monetarily to the preparation and submission of this brief. By letters filed with the Clerk of the Court, the parties have consented to the filing of this brief.

SUMMARY OF THE ARGUMENT

The FCBA believes that *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008), misconstrues the criteria for patentability under section 101. The FCBA believes that no new "test" for patentability is required beyond that already provided by this Court in *Diamond v. Diehr*, 450 U.S. 175 (1981), *Parker v. Flook*, 437 U.S. 584 (1978), and *Gottschalk v. Benson*, 409 U.S. 63 (1972). As described in *Diehr*, these cases present a three-part analysis for determining patentability of process patents under section 101: First, does the claimed process include a law of nature, natural phenomena, or an abstract idea? Second, if the process includes one of these three recognized exclusions, do the claims recite a law of nature, natural phenomena, or abstract idea apart from any specific object, or standing alone (i.e., in the abstract)? Third, whether the claim implements or applies the law of nature, natural phenomena, or abstract idea in a process that is performing a function that the patent laws were designed to protect? *Diehr*, 450 U.S. at 185, 191-92.

The *Diehr* analysis presents a framework for determining patentability that avoids bright-line "tests" – such as whether or not patent claims are "tied" to any type of technology, or "transform" items from one state or thing to another. The analysis is thus more flexible and can properly be applied by courts to differing types of technologies, and does not foreclose emerging technologies, or those technologies that do not yet exist.

In response to the specific questions presented, the FCBA believes that the Federal Circuit's *Bilski* decision, with its emphasis on "tying" a process to a machine or apparatus or "transforming" an article, misconstrues the requirements for patentability for process inventions.[2]

ARGUMENT

I. INTRODUCTION

Defining the boundaries between statutory and non-statutory subject matter for processes, as opposed to articles, machines, or compositions, is not an easy task. *Lab. Corp. of America Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124, 135 (2006) (Breyer, J., dissenting) (citing *Parker v. Flook*, 437 U.S. at 589). The patent statute broadly defines the boundaries of process inventions, allowing a patent for "*any* new and useful process...or *any* new and useful improvement thereof." 35 U.S.C. § 101 (emphasis added). As noted by the Federal Circuit:

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[2] The FCBA does not believe that 35 U.S.C. § 273(a)(3) by itself elevates business methods to statutory subject matter. Section 273(a)(3) merely indicates that "method," as that term is used in 35 U.S.C. § 100(b), includes "a method of doing or conducting business." This by itself does not place a business method outside the defined exclusions to section 101, particularly the abstract idea exclusion, and does not exclude these particular processes from *Diehr*'s requirement that the process be tied to some other category of statutory subject matter.

> The use of the word 'any' in § 101 represents Congress's intent not to place any restrictions on the subject matter for which a patent may be obtained beyond those recited in § 101 and the other parts of Title 35.

In re Alappat, 33 F.3d 1526, 1542 (Fed Cir. 1994); *see also Diehr*, 450 U.S. at 182 (citations omitted)(cautioning against reading into the patent laws "limitations and conditions which the legislature has not expressed"). Many decisions also rely on the oft-cited language from the 1952 Patent Act Committee Reports that statutory subject matter is intended to "include anything under the sun made by man." *See, e.g., Diehr*, 450 U.S. at 182 (citations and quotations omitted).

However, the breadth of patentable subject matter is not absolute. There are limits to section 101, as "every discovery is *not* embraced within the statutory terms." *Diehr*, 450 U.S. at 185 (emphasis added). This Court has articulated three specific exclusions from section 101: laws of nature, natural phenomena, and abstract ideas. *Id.* Laws of nature and natural phenomena are not patentable, as they are "manifestations of nature, free to all men and reserved exclusively to none." *Id.* (citing *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) and quoting *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948)). Abstract ideas also are not patentable:

> [A]n idea of itself is not patentable. A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right. [M]ental processes...and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work.

Gottschalk, 409 U.S. at 67 (citations and quotations omitted). Together these three categories represent the unpatentable "basic tools of scientific and technological work." *Id.*

Applying these two concepts to patent claims has proven difficult. "The line between a patentable 'process' and an unpatentable 'principle' is not always clear." ***Flook***, 437 U.S. at 589. If analyzed down to their basic components, many if not all inventions involve some type of natural phenomena, law of nature, or idea:

> After all, many a patentable invention rests upon its inventor's knowledge of natural phenomena; many "process" patents seek to make abstract intellectual concepts workably concrete; and all conscious human action involves a mental process.

Lab. Corp. of America, 548 U.S. at 134 (Breyer, J., dissenting).

Roughly thirty years ago, faced with the task of determining the patentability of mathematical algorithms in the emerging field of digital computers, this Court reconciled the differing theories for the patentability of process inventions. *Gottschalk*, *supra*; *Flook*, *supra*; and *Diehr*, *supra*. These decisions analyzed the historical scope of the patentability of process claims, delineated governing principles, and applied those principles to the subject claims embodying the new technology (finding non-patentable subject matter in *Gottschalk* and *Flook*, and patentable subject matter in *Diehr*).

The result was a three-part analysis for determining process claim patent eligibility: First, does the claimed process include a law of nature, natural phenomena, or an abstract idea? Second, if the process includes one of these three recognized exclusions, do the claims recite a law of nature, natural phenomena, or abstract idea apart from any specific object, or standing alone (i.e., in the abstract)? Third, whether the claim implements or applies the law of nature, natural phenomena, or abstract idea in a process that is performing a function that the patent laws were designed to protect? *Diehr*, 450 U.S. at 185, 191-92.

Since that time, this three-part analysis has not always been applied to process claims arising out of computer, pharmaceutical, and other technologies such as business methods. Reconciling the broad statutory language of section 101 with its exclusions has not always been easy, as the Federal Circuit has recognized:

> To include some things is to exclude others. The chore of defining exactly what is excluded under § 101, and applying such definitions to specific cases, has caused courts to expend much effort in trying to find the right words to describe some rather abstract notions....
>
> Within Supreme Court guidance, this court and its predecessor, as well as the Patent and Trademark Office (PTO) have sought to find more precise definitions for the things excluded, but without complete success.

In re Warmerdam, 33 F.3d 1354, 1358-59 (Fed. Cir. 1994).

Terms used in an attempt to find the right words to explain nonstatutory subject matter have led to "tests" involving phrases such as "mathematical algorithms" and "reactions of an individual." *Id.* at 1359 & n. 2. For business methods, prior cases have used words such as a "useful, concrete, and tangible result," "tied to a particular machine," or "transforming or reducing" an article from one state to another. *Bilski,* 545 F.3d

at 959; *see also State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998); *AT&T Corp. v. Excel Commc'ns, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999).

The FCBA believes that the determination of statutory subject matter under section 101 should resort back to the analysis set forth in *Diehr* and avoid the use of broad, definitional phrases or "tests." The *Diehr* analysis does not focus on the absolutes of whether a process is tied to a machine, or transforms some article, but instead roots the inquiry into the notions of excluding those processes that are nothing more than ideas, concepts, or laws of nature. Properly recognized and applied, *Diehr* sets forth a standard for patentability of process claims that can be applied by a court to the specific claims at issue, satisfy the statutory mandate, and recognize applicable judicial exceptions.

II. THE *DIEHR* ANALYSIS

The issue in determining patentability turns on how one determines whether the words chosen to describe a process – the patent claims themselves – properly situate the invention as something "inventive" and not merely the recitation of an abstract idea, natural phenomena, or law of nature. As discussed below, a return to the principles enunciated in *Diehr* allows a court to resolve the question without resort to broad phrases, "tests," or definitional terms. The same criteria are used regardless of the claimed technology, and thus would include, but are not limited to, areas that have previously raised questions such as mathematical algorithms or business methods.

The *Diehr* analysis asks three interrelated questions:

First, does the claimed process include a law of nature, natural phenomena, or an abstract idea? This first step merely asks whether one of the excluded classes is even present. If so, it is an indication that a scientific principle, law of nature, or idea *may* be the subject matter claimed and, thus, justify a rejection of that claim under section 101. *Diehr*, 450 U.S. at 185, 191; *see also In re Meyer*, 688 F.2d 789, 794-95 (Fed. Cir. 1982).[3] If not, then the claim would constitute patentable subject matter, assuming no other conditions applied.

Second, if the process includes one of the three recognized exclusions, do the claims recite a law of nature, natural phenomena, or abstract idea **apart from any specific object, or standing alone** (i.e., in the abstract)? *Diehr*, 450 U.S. at 191-

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[3] In *Meyer*, the presence of a mathematical formula or algorithm in a claim was a "signpost for further analysis." *Meyer*, 688 F.2d at 795. This first step is specifically described as such in *Diehr*: "We recognize, of course, that *when* a claim recites a mathematical formula (or scientific principle or phenomena of nature), an inquiry must be made into whether the claim is seeking patent protection for that formula in the abstract." *Diehr*, 450 U.S. at 191.

92. If so, then the claims fall outside the boundaries of statutory subject matter. If not, then further analysis must occur (the next question). As stated in *Diehr*:

> [W]hen a claim recites a mathematical formula (or scientific principle or phenomena of nature), an inquiry must be made into whether the claim is seeking patent protection for that formula [or scientific principle or phenomena of nature] in the abstract. A mathematical formula [or scientific principle or phenomena of nature] as such is not accorded the protection of our patent laws....

450 U.S. at 191 (citing *Gottschalk, supra*).

When conducting this analysis, the claims must be "considered as a whole," without "dissection" into new and old and new elements. *Id.* at 188-89. And, it is not the mere presence of a law of nature, a natural phenomena, or an abstract idea that renders the claim nonstatutory. Rather, it is whether or not the claim preempts all other uses of that law, phenomena, or idea. *See id.* at 187.[4]

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[4] The proper application of this question may provide the proper framework for analyzing many cases that appear "difficult." For example, one dissent in *Bilski* would have decided the matter based on this first *Diehr* question, without articulating any particular "test." *Bilski*, 545 F.3d at 1011

(continued....)

The claims at issue in both *Gottschalk* and *Flook* were found not to recite statutory subject matter under section 101 because of this second factor. In *Gottschalk*, this Court determined the claims only recited a formula for converting binary-coded decimal (BCD) numerals to pure binary numerals. 409 U.S. at 71-72. In *Flook*, this Court likewise found that the claims did no more than present a mathematical formula, without explaining or showing the presence of any other inventive concept. 437 U.S. at 593-94. However, in *Diehr*, this Court found that the invention presented statutory subject matter because the claims did not merely recite a formula, but rather detailed a process that employed the mathematical formula in conjunction with other steps in curing synthetic rubber. *Diehr*, 450 U.S. at 187.

Thus, if the claims recite a law of nature, natural phenomena, or abstract idea apart from any specific object, or standing alone (i.e., in the abstract), such that the law, phenomena, or idea are preempted from other uses, the claims are nonstatutory under section 101. It makes no difference what other aspects the claim might have, such as the recitation of an apparatus, a specific

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(continued) . . .

(Rader, J., dissenting) ("This court labors for page after page...to say what could have been said in a single sentence: 'Because Bilski claims merely an abstract idea, this court affirms the Board's rejection.'").

limitation to a field of use by virtue of another process, or post-solution applications of a formula – the claims are rendered nonstatutory despite the presence of these features if they "in the abstract" do nothing more than claim a law of nature, a natural phenomena, or an idea. *See, e.g., Flook*, 437 U.S. at 586; *see also Diehr*, 450 U.S. at 192 n. 14.

Third, even if the claims do not recite an excluded category "in the abstract," the inquiry is not complete. The final question in the *Diehr* standard asks whether the claim implements or applies the law of nature, natural phenomena, or abstract idea in a process that is performing a function that the patent laws were designed to protect. *Diehr*, 450 U.S. at 192.

Diehr reached this conclusion based on an analysis of the applicable case law related to processes, holding that "an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection." *Diehr*, 450 U.S. at 187-88 (citations omitted). With regard to the synthetic rubber curing process and the use of the mathematical Arrhenius equation, this Court noted that the "equation is not patentable in isolation, but when a process for curing rubber is devised which incorporates in it a more efficient solution of the equation, that process is at the very least not barred at the threshold by § 101." *Id.* Thus the Court concluded that a claim containing a law of nature, natural phenomena, or abstract idea may be patentable when it *implements* or *applies* that law, phenomena, or idea in a process that is performing a function which the patent laws were designed to protect. *Id.* at 192.

III. APPLICATION OF THE *DIEHR* ANALYSIS

Although not always recognized, the three-part *Diehr* analysis has already been applied to many different process claims addressed by the courts. These prior cases provide guidance as to whether different process technologies present patentable subject matter under section 101.

For example, if a process includes as one of its steps the application or implementation of an apparatus or machine, the process is *likely* to present patentable subject matter. Clearly, applying a law of nature, natural phenomena, or idea to a machine would meet the third *Diehr* requirement: that the process "apply or implement" another class of statutory subject matter. However, merely reciting an apparatus or machine in the process steps should not turn an otherwise nonstatutory claim into a statutory claim. The claim still must independently meet the second *Diehr* requirement that it not claim a law of nature, natural phenomena, or idea "in the abstract." *See, e.g.*, *In re Grams*, 888 F.2d 835, 839-40 (Fed. Cir. 1989) (finding a process claim nonstatutory even though the claim included a machine because the machine was merely used to collect data).

Likewise, a process that transforms some article to a different state or thing is *likely* to present patentable subject matter. "Transformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines." *Diehr*, 450 U.S. at 184 (quoting *Gottschalk*, 409 U.S. at 70); *see also In re Schrader*, 22 F.3d 290, 295 (Fed. Cir. 1994). The "transformation" language in both *Diehr* and *Gottschalk* derives from an earlier case, *Cochrane v. Deener*, which noted that a process is "an act, or a series of acts, performed on the subject-matter to be transformed and reduced to a different state or thing." *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1877). However, as discussed in more detail below, transformation only provides a "clue" as to patentability, and is not an absolute test. *See Gottschalk*, 409 U.S. at 71 (finding that patent-eligibility does not require that the process "either be tied to a particular machine or apparatus or must operate to change articles to a 'different state or thing'"); *see also Flook*, 437 U.S. at 588 n. 9. Thus, merely because a process operates to transform an article does not mean conclusively that it is patentable subject matter.

An otherwise nonstatutory process claim also cannot be rendered statutory by the addition of a "field of use" limitation or by claiming "post-solution" activity. *Flook*, 437 U.S. at 590. In *Flook*, the claim was not eligible for statutory protection under section 101 even though it was restricted to a particular field of use (the petrochemical and oil refinery industries) and included post-solution activity (the adjustment of the alarm limit). *Id.*; *see also Warmerdam*, 33 F.3d at 1360 (locating the medial axis of the object); *Schrader*, 22 F.3d at 294-95 (entering the bids in a record); *Grams*, 888 F.2d at 839-840 (performing clinical tests to obtain data); *In re Sarkar*, 588 F.2d 1330, 1335-36 (C.C.P.A. 1978) (measuring cross-channel dimensions).

A process that merely claims a mental process standing alone, without any specific tie to another category of statutory subject matter, is not eligible for patent protection. *In re Comiskey,* 499 F.3d 1365, 1377-78 (Fed. Cir. 2007) (citing and explaining *Schrader*, *supra*, *Warmerdam*, *supra*, and *Meyer*, *supra*). Such claims would fail both dispositive *Diehr* standards: that the claims not recite an idea "in the abstract," and that the claims must be "implemented or applied" to another statutory class of subject matter.

The *Diehr* analysis can also be applied to "business method" process claims. *State Street* and *AT&T Corp.* both involved processes – business methods – that implemented or were applied to a machine, which is by itself a recognized statutory class. *See Comiskey*, 499 F.3d 1365 n. 14 (discussing *State Street*, 149 F.3d at 1373, and *AT&T Corp.*, 172 F.3d at 1355, 58). Moreover, they both claimed technology that did not rely on ideas or mental processes "in the abstract." *State Street*, 149 F.3d at 1373-74; *AT&T Corp.*, 172 F.3d at 1358-59. Applying the *Diehr* analysis would properly situate the claims as patentable subject matter. In contrast, other cases involving business methods have concluded that the processes were not patentable, as they were ultimately directed to ideas "in the abstract." *In re Maucorps*, 609 F.2d 481 (C.C.P.A. 1979) (finding unpatentable a system for optimizing an organization); *Meyer*, 668 F.2d at 796 (finding unpatentable a system for diagnosing patients); *see also Comiskey*, 499 F.3d at 1378.

Thus, the courts have already issued criteria in a wide range of cases as to what is, and is not, statutory subject matter under section 101. These existing criteria all follow the *Diehr* analysis, and show how that analysis can be applied without resort to "precise definitions" or the arbitrary creation of definitional terms.

IV. THE *BILSKI* DECISION MISCONSTRUES THIS COURT'S PRECEDENT BY REQUIRING PROCESSES TO BE TIED TO AN APPARATUS OR TRANSFORM AN ARTICLE

The FCBA believes that a method or process does not particularly have to result in a physical transformation of an article or be tied to a machine to be patent-eligible subject matter under section 101. This Court has clearly recognized that a process need not be tied to these qualifications. *Gottschalk*, 409 U.S. at 71; *Flook*, 437 U.S. at 588 n.9. In addition, requiring such a specific result risks foreclosing protection for new areas of technology. *Gottschalk*, 409 U.S. at 71.

The notion that a process must be either tied to a particular machine or result in the physical transformation of an article to fall within section 101 arises from a historical analysis of the "process" cases, including *O'Reilly v. Morse*, 56 U.S. (15 How.) 62 (1853), *The Telephone Cases*, 126 U.S. 1 (1888), *Corning v. Burden*, 56 U.S. (15 How.) 252 (1853), *Cochrane v. Deener*, *supra*, *Tilghman v. Proctor*, 102 U.S. 707 (1880), *Expanded Metal v. Bradford*, 214 U.S. 366 (1909), *Smith v. Snow*, 294 U.S. 1 (1935), and *Waxham v. Smith*, 294 U.S. 20 (1935); *see Gottschalk*, 409 U.S. at 68-71. After reviewing these cases, this Court concluded that "[t]ransformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines. *Gottschalk*, 409 U.S. at 70.

But this "clue" does not equate to a firm "rule." After elaborating on the historical notions of statutory coverage for a process, the Court in *Gottschalk* was clear to point out that the prior cases were not meant to be limiting:

> It is argued that a process patent must be either tied to a particular machine or apparatus or must operate to change articles or materials to a "different state or thing." We do not hold that no process patent could ever qualify if it

> did not meet the requirements of our prior precedents.

Id. at 71. This caution was repeated in *Flook*, albeit in a footnote:

> The statutory definition of "process" is broad. An argument can be made, however, that this Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a "different state or thing." As in *Benson* [*Gottschalk*], we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents.

Flook, 437 U.S. at 588 n.9 (citations omitted). Defining process patentability to something tied to a particular machine, or something that transforms something else to a different state or thing, risks limiting technological growth. *See Gottschalk*, 409 U.S. at 71 (recognizing the danger of "freez[ing] process patents to old technologies, leaving no room for the revelations" of new technologies).

This fact is supported by the body of developed case law relating to process patents, and by examination of several recent technologies. The early process patent cases that were not tied to a particular apparatus all dealt with chemical or electromagnetic transformations. *See Morse*, *The Telephone Cases*, and *Corning v. Burden*, discussed in *Gottschalk*, 409 U.S. at 68-70. A court reviewing these cases before 1877 could have articulated the rule that "processes" in the statutory sense were *limited* to chemical or electromagnetic transformations, since those were the technologies where the statutory issues arose. Mechanical, as opposed to chemical or electromagnetic, processes would likely be excluded. However, in 1877 this Court, reviewing the statutory requirements, found that mechanical processes should *not* be excluded as statutory subject matter. As explained in *Expanded Metal*:

> It is lastly contended...that, in view of the former declarations and opinions of this court, what is termed a process patent relates only to such as are produced by chemical action, or by the operation or application of some similar elemental action, and that such processes do not include methods or means which are effected by mere mechanical combinations....
>
> [I]t does not follow that a method of doing a thing, so clearly indicated that those skilled in the art can avail themselves of mechanism to carry it into operation, is not the subject-matter of a valid patent. The contrary has been declared in decisions of this court. A

> leading case is *Cochrane v. Deener* in which this Court sustained a process patent involving mechanical operations....

214 U.S. at 381-83 (citations omitted). Application of claims to mechanical processes was deemed statutory subject matter in numerous cases, including *Smith v. Snow, supra*, and *Waxham v. Smith, supra*; *see Gottschalk*, 409 U.S. at 70-71.

Similarly, after 1877 one could have elaborated the rule that limited processes to chemical, electromagnetic, or mechanical transformations. Such limitations, of course, would forego any process patents on technologies such as lasers and fiber optics, both areas that enjoy great patent protection.

The Federal Circuit's *Bilski* decision misconstrues these cases by holding that a method or process has to result in a physical transformation of an article or be tied to a machine to be patent-eligible subject matter under section 101. *Bilski*, 543 F.3d at 954. Given the mandate that process patents are to be construed broadly, and the desire to avoid "freezing" process patents to certain technologies, the decision risks precluding protection for new technologies and revelations.

CONCLUSION

Many process patents, including "business method" patents such as the one at issue here, touch upon abstract ideas, laws of nature, or natural phenomena. This Court has already established an analytical framework for determining the boundary between what is patentable and not patentable, recognizing the inherent inclusion of abstract intellectual concepts and mental processes in every activity. There is no need to go beyond the *Diehr* analysis when determining the patentability of business method patents

Respectfully submitted,

SCOTT M. MCCALEB
PRESIDENT
THE FEDERAL CIRCUIT BAR ASSOCIATION
1620 EYE ST., N.W.
SUITE 700
WASHINGTON, DC 20006
(202) 408-4000

JAMES F. MCKEOWN*
MICHAEL J. SONGER
CROWELL & MORING
1001 PENNSYLVANIA AVE., NW
WASHINGTON, DC 20004
(202) 624-2500

* *Counsel of Record*

Attorneys for the Federal Circuit Bar Association

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No. 08-964

In the Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR, PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ Of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF FÉDÉRATION INTERNATIONALE DES CONSEILS EN PROPRIÉTÉ INDUSTRIELLE AS *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY

MAXIM H. WALDBAUM
Counsel of Record
HENRY L. MANN
SCHIFF HARDIN LLP
900 THIRD AVENUE
NEW YORK, NY 10022
(212) 753-5000

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INTEREST OF *AMICUS CURIAE*

Pursuant to Supreme Court Rule 37, Fédération Internationale Des Conseils En Propriété Industrielle ("FICPI") submits this brief as *amicus curiae* in support of neither party.[1] All parties were notified of FICPI's intent to file this brief and their consents to this filing have been filed with this Court.

Established in 1906, FICPI is a Switzerland-based international and non-political association of approximately 4,800 intellectual property attorneys from over eighty countries, including the United States. FICPI's members represent individual inventors as well as large, medium and small companies. One of the members' major roles is to advise inventors in intellectual property matters and secure protection for industrial innovation. FICPI supports predictable, balanced global protection of patents, the global harmonization of substantive patent law, and the interests of inventors and the U.S. Patent and Trademark Office ("the PTO") for recognizing a fair scope of patent protection consistent with the goals of the patent system and the expectations of the inventing public.

FICPI is concerned that the Federal Circuit has disregarded Congress's intent of allowing for a broad scope of patentable subject matter in crafting an arbitrary and artificial test that fails to anticipate future technology while usurping the roles of novelty, nonobviousness, and other Patent Law requirements as proper arbiters of patentability.

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[1] Pursuant to Supreme Court Rule 37.6, counsel for *Amicus Curiae* certifies that this brief was not written in whole or in part by counsel for any party, and that no person or entity other than *Amicus Curiae* or its counsel has made a monetary contribution to the preparation or submission of this brief.

FICPI's members serve the world's community of inventors in seeking protection for their inventions. Because many of its members are foreign practitioners, FICPI has a unique perspective on the global impact of the diminishing viability of certain categories of process claims in the United States. In this vein, FICPI desires to ensure that its members' clients are afforded fair protection for their inventions, and therefore respectfully submits this brief in support of neither party.

INTRODUCTION AND SUMMARY OF ARGUMENT

The Federal Circuit's *en banc* holding in *In re Bilski*, imposing a threshold requirement that a process claim must be tied to a particular machine or apparatus or transform a particular article into a different state or thing in order to qualify as eligible subject matter under 35 U.S.C § 101, should be reversed because it arbitrarily and unnecessarily constricts the scope of patentable subject matter. The scope of patentable subject matter was appropriately defined by the Supreme Court in *Diamond v. Chakrabarty* as "anything under the sun that is made by man." *Diamond v. Chakrabarty*, 44 U.S. 303, 309 (1980). The § 101 analysis should focus on the section's substantive utilitarian requirement, rather than retrospectively attempting to rigidly define the categories of patentable subject matter without the foresight of the particular form technological innovations may take in the future.

The Federal Circuit's machine-or-transformation test also unnecessarily narrows the pool of patent-eligible process technologies, particularly as to software and information technology, as the established analyses required under §§ 102, 103, and 112 already provide sufficient filtering of claims that are truly beyond the scope of protection intended by the Patent Act. Lastly, due to the rapidly-evolving nature of advances in science and technology, the narrow *Bilski* test, like its predecessors, will prove more confusing than clarifying as its strict requirements will become increasingly difficult to apply to emerging technologies. In fact, post-*Bilski* decisions at the Board of Patent Appeals and Interferences show that the PTO is already struggling to consistently apply § 101 to existing fields of technology under the new test. As such, attempts to narrowly and strictly define the parameters of § 101-eligible subject matter should be abandoned, and the focus of the PTO and the courts should return to the Act's requirements of utility, novelty, non-obviousness, and enablement.

ARGUMENT

I. PATENTABLE SUBJECT MATTER UNDER § 101 SHOULD BE CONSTRUED AS BROADLY AS POSSIBLE, IN KEEPING WITH THE SECTION'S STATUTORY LANGUAGE, IN ORDER TO ACCOUNT FOR THE UNPREDICTABLE NATURE OF INNOVATION IN TECHNOLOGY AND SCIENCE.

Consistent with 35 U.S.C. § 101's language, providing that "*any* new and useful process, machine, manufacture, or composition of matter, or *any* new and useful improvement thereof" may be patented as long as it meets all other statutory requirements set forth in the Patent Act, the parameters of patentable subject matter under § 101 should be broad and flexible in order to encompass the widest variety of new and useful inventions. 35 U.S.C. § 101. *Diamond v. Chakrabarty* lays out the appropriate test for § 101 eligibility, defining patentable subject matter as "anything under the sun that is made by man" provided § 101's utilitarian requirement is also met. *Chakrabarty*, 447 U.S. at 309 (emphasis added).

By their nature, innovations in science and technology often take unpredictable forms. As such, the drafters of the 1952 Patent Act put limited restrictions on the ambit of patentable subject matter under § 101, requiring only that the process, machine, manufacture, or composition of matter at issue be "new and useful" to be patent-eligible. 35 U.S.C. § 101. Section 101 implicitly excludes "laws of nature, natural phenomena, and abstract ideas" from the realm of patent-eligible subject matter, as articulated by the Supreme Court. *Diamond v. Diehr*, 450 U.S. 175, 185 (1981). *See also O'Reilly v. Morse*, 15 How. (56 U.S.) 62 (1853) (denying a claim for the use of electromagnetism under § 101 because electromagnetism is a natural phenomenon); *Gottschalk v. Benson*, 409 U.S. 63 (1972) (finding a claim for an algorithm invalid under § 101 because it was no more than a representation of a law of nature); *Parker v. Flook*, 437 U.S. 584 (1978) (denying patent protection to a claim for an algorithm under § 101 because the application claimed nothing more than a law of nature and therefore was not new, but noting that "an inventive application" of such a principle may be patented). As these cases show, natural phenomena and laws of nature can never be "new" because they inherently preexist any human discovery, while abstract ideas are not "useful" absent any inventive and practical application. The categorical exclusions of laws of nature, natural phenomena, and abstract ideas from the reach of § 101 eligibility are thus directly warranted by the language of that Act itself.

Aside from these established exceptions, the parameters of § 101 must be construed broadly in order to allow for flexibility and adaptation to ever-evolving technological innovations, keeping the doors of patentability open to new innovations regardless of whether their form fits within any previously-known conception of "process, machine, manufacture, or composition of matter." 35 U.S.C. § 101. In *State Street*, the Federal Circuit correctly instructed courts faced with § 101 challenges to focus not on a claim's formalistic embodiment, but rather on whether the claimed invention was in fact useful. *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 1375 (Fed. Cir. 1998) ("The question of whether a claim encompasses statutory subject matter should not focus on which of the four categories of subject matter a claim is directed to . . . but rather on the essential characteristics of the subject matter, in particular, its practical utility"). The simplicity and clarity of *Chakrabarty*'s "anything under the sun" standard will allow PTO examiners to focus their energy on § 101's straightforward utilitarian requirement, rather than struggling to retrospectively define the parameters of the four categories of patentable subject matter in the face of evolving technological formats. *Chakrabarty*, 44 U.S. at 309.

II. THE MACHINE-OR-TRANSFORMATION TEST FOR PROCESS CLAIMS UNNECESSARILY RESTRICTS THE SCOPE OF PATENTABLE SUBJECT MATTER BECAUSE THE PATENT ACT'S REQUIREMENTS UNDER §§ 102, 103, AND 112 ALREADY SERVE AS SUFFICIENT FILTERS FOR CLAIMS THAT ARE TRULY BEYOND THE SCOPE OF PATENTABILITY.

Setting rigid, formalistic requirements for the form of patentable processes risks foreclosing the possibility of patent protection for many new and useful processes without need, as the case-specific analyses prescribed under §§ 102, 103, and 112 already provide sufficient filtering of claims that do not warrant patent protection. Two Federal Circuit decisions post-*Bilski* are illustrative. *See In re Comiskey*, 554 F.3d 967 (Fed. Cir. 2009) (finding petitioner's claims for a method and system for mandatory arbitration which did not require the use of any mechanical device invalid under § 101 because it failed the *Bilski* test, even though the Board of Patent Appeals and Interferences had previously found the claims invalid under § 103); *In re Ferguson*, 558 F.3d 1359 (Fed. Cir. 2009) (invalidating claims for methods and paradigms for marketing products under *Biski*'s § 101 test even though the PTO examiner had previously found the claims invalid under §§ 102, 103 and 112). In both cases, the Federal Circuit's application of *Bilski* was superfluous, as the claims at issue had already been found invalid on their merits as anticipated, obvious, or inadequately disclosed. *Id.*

Further, the reanalysis of the *Comiskey* and *Ferguson* claims under *Bilski* did not add any practical value to the broader issue at hand, i.e., how to approach and evaluate unprecedented innovation while remaining true to the Patent Act's purpose of promoting "the *progress* of . . . useful arts." U.S. CONST., art. I § 8 (emphasis added). Simply dismissing potentially innovative and useful processes at the threshold, because they are not tied to a particular machine or do not transform one article into another state or thing, without reaching the heart of the patent analysis under §§ 102, 103 and 112 provides little practical guidance for inventors working in unprecedented fields of technology. Rather, the *Bilski* test arbitrarily cuts off the prospect of patentability to many emerging technological fields simply because they do not fit within the familiar format of inventions past.

In her concurrence in *In re Ferguson*, Judge Newman expressed her discontent with the majority's narrow interpretation of § 101 under *Bilski*, finding it incompatible with the changing nature of advances in technology. *In re Ferguson*, 558 F.3d at 1040-41 (Fed. Cir. 2009) (Newman, J., concurring) (concurring in the judgment based on the PTO's conclusion that the claims at issue were obvious and therefore failed under § 103). Judge Newman warned that the court's application of *Bilski*'s machine-or-transformation test could create an artificial barrier to patentability for many new information technologies. *Id.* at 1041. While many of these methods and processes do not take the familiar physical form of past inventions, "blurring the traditional line between machine and human," many nonetheless enhance human capabilities and therefore warrant at least a fair consideration under the Patent Act's substantive criteria set forth in §§ 102, 103 and 112. *Id.* at 1041. Foreclosing patentability to these new technologies at the § 101 threshold is "unworthy of [the court's] responsibility to support innovation in the future." *Id.* at 1041. The more targeted statutory requirements of novelty, non-obviousness, and enablement serve as sufficient gatekeepers for the patent system, allowing for a flexible, case-by-case analysis of unprecedented subject matter.

III. AS TECHNOLOGY AND SCIENCE EVOLVE, RIGID SUBJECT MATTER REQUIREMENTS SUCH AS THE *BILSKI* MACHINE-OR-TRANSFORMATION TEST WILL RAISE MORE QUESTIONS REGARDING SUBJECT MATTER ELIGIBILITY THAN THEY ANSWER.

Setting retrospective, rigid parameters for the categories of patentable subject matter will confuse, rather than clarify, the § 101 analysis, and take the focus away from more instructive and informative inquiries into utility, novelty, non-obviousness, and enablement.

A. The PTO's Application of the *State Street* "Useful, Concrete and Tangible Result" Test Highlights the Futility of Rigid Tests for § 101.

In November 2005, many years after the decision in *State Street*, the PTO promulgated the *Interim Guidelines for Examination of Patent Applications for Subject Matter Eligibility* (Nov. 22, 2005)

("Guidelines") to clarify and streamline the § 101 analysis under *State Street*, which was apparently causing confusion among examiners. However, the Guidelines featured eight distinct ancillary tests and additional subtests for determining whether a claim constituted statutory subject matter. Guidelines at 14-23. *State Street*'s useful, tangible, and concrete result test alone required four distinct sub-tests to clarify, albeit unsuccessfully, what exactly useful, tangible, and concrete results are. *Id.* at 20-22. Thus, the Guidelines produced even more inconsistent and conflicting results.

Many of the ancillary tests adopted in the Guidelines originated as attempts to clarify the meaning of previous requirements. *See* Memorandum to the United States Patent and Trademark Office from Brian Hickman, *Comments on Interim Guidelines,* 4 (May 19, 2006) ("Hickman") (criticizing the PTO's interpretation of certain § 101 case law, which resulted in further confusion).[2] This hopeless array of overlapping tests resulted in disparate and conflicting interpretations by examiners. *Id.* at 1-2 (listing several examples of conflicting PTO rejections, including (1) a rejection that erroneously suggested that if the applicant had simply stated that the claimed method was performed on a computer, it would be saved from the abstract idea exception because the addition of a computer, without more, would assure that the claim produced a concrete, useful, tangible result and therefore had practical utility, and (2) a rejection for improper subject matter because the claims were not directed at a "final result that is useful, tangible, and concrete," convoluting the *State Street* test).

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[2] In a commentary expressing his consternation with the Guidelines, Hickman clarified that many of the distinct ancillary requirements adopted by the PTO "were originally nothing more than attempts to clarify the meaning of other requirements." Hickman at 4. Using the *State Street* test to illuminate this point, he noted that "the 'substantially repeatable result' requirement stems from a USPTO attempt to clarify of the 'concrete result' requirement. *Id.* The 'concrete result' requirement stems from a judicial pronouncement of a 'useful, tangible and concrete result' consideration. The 'useful, tangible and concrete result' consideration was originally given as an example of how a claim could be shown to satisfy the 'practical application' requirement. The 'practical application' requirement was initially intended to help distinguish patentable eligible subject matter from 'abstract ideas, laws of nature and natural phenomenon.' Finally, the 'abstract ideas, laws of nature and natural phenomenon' categories were

B. The Machine-or-Transformation Test Similarly Fails to Provide Adequate Guidance while Threatening the Viability of Many Innovations.

In establishing the new machine-or-transformation test, which was designed to cut through some of the confusion surrounding the useful, tangible, and concrete test, the *Bilski* majority reaffirmed the concept that process claims (including software and business methods) are "'subject to the same legal requirements for patentability as applied to any other process or method.'" *Bilski*, 545 F.3d at 960 (quoting *State Street*, 149 F.3d at 1375-76). Although the majority acknowledged that "future developments in technology and the sciences may present difficult challenges to the machine-or-transformation test"

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created to explain what types of things do not fall into any of the four statutory categories of section 101." Hickman at 4.

that require altering it or even setting it aside, the reality is that the test has *already* proven difficult to consistently apply, and has had a detrimental impact on the patentability of many *existing* technological innovations.

Despite the Federal Circuit's assurance that it was declining to categorically bar certain categories of claims, the practical result is nonetheless a great hindrance to the scope of patentability in many software-related fields. In particular, the Federal Circuit failed to decide in *Bilski* whether a claim limitation of implementation on a "general purpose computer" (*e.g.*, a personal computer) would tie a claim to a "particular machine" for purposes of the machine-or-transformation test. *See* 545 F.3d at 994 (Newman, J., dissenting). Left with the decision, the PTO has answered the question in the negative, thus imperiling the viability of thousands of software and other computer-implemented claims, notwithstanding their usefulness, novelty, nonobviousness, and indeed, their social and economic value. *See, e.g.*, *Ex parte Langemyr*, 2008 WL 5206740 (B.P.A.I. May 28, 2008) (rejecting as non-statutory subject matter a claim for a "method executed in a computer apparatus" for producing a model of a physical system using a set of equations because the transformation only occurs with respect to abstract equations and not to a physical article); *Ex parte Nawathe et al.*, 2009 WL 327520 (B.P.A.I. Feb. 9, 2009) (distinguishing between a "computerized method" to a general purpose processor, which is not patentable, and a apparatus directed to a general purpose computer, which is patentable); *cf. Ex parte Cornea-Hasegan*, 2009 WL 86725 (B.P.A.I. Jan. 13, 2009) (holding that a method reciting a "processor" using "floating-point hardware" was not tied to a particular machine"); *Ex parte Wasynczuk*, 2008 WL 2262377 (B.P.A.I. June 2, 2008) (affirming the § 101 rejection of a claim that recited a "computer-implemented" process of modeling physical systems, but finding patentable a dependent claim that required the two steps of the claimed process to be performed by a first and second "physical computing device," reasoning that an embodiment featuring two computers operating together was sufficient to constitute a "particular machine," but not the embodiment specifying a single computer).

Patents in other existing technological fields have also been imperiled by B.P.A.I. decisions that purportedly follow *Bilski*. In the computer networking field, the B.P.A.I. has determined that claims reciting "a number of clients," "a network," and "a server" are not tied to a particular machine. *Ex parte Harris*, 2009 WL 86719, (B.P.A.I. Jan. 13, 2009); *cf. Ex parte Uceda-Sosa*, 2008 WL 4950944, (B.P.A.I. Nov. 18, 2008) (finding as eligible under § 101 a claim directed to "a network executing a method"). With respect to databases, the B.P.A.I. in *Ex parte Koo*, 2008 WL 5054161 (B.P.A.I. Nov. 26, 2008), found that a claim reciting "[a] method for optimizing a query in a relational database management system" not to be tied to a particular machine, reasoning that because a relational database system may be a software system, it is unpatentable if it fails to recite the system "in terms of hardware or tangible structural elements."

As the foregoing illustrates, in addition to jeopardizing the patentability of otherwise useful and innovative inventions, the *Bilski* machine-or-transformation test, like *State Street*'s useful, concrete, and tangible result test before it, fails to provide adequate guidance for practitioners and examiners, thus leading to diverging interpretations. This failure is due in significant part to the limitations of language; it is inevitably challenging to fashion a easily-applied test that encompasses all of mankind's inventive endeavors using words alone.

Rather than create more confusion and unnecessary debate over the parameters of § 101 by creating another test, the Court should focus the patent community's attention back to the time-tested evaluations under §§ 102, 103, and 112.

CONCLUSION

For the foregoing reasons, the judgment of the court of appeals should be reversed.

MAXIM H. WALDBAUM
Counsel of Record
HENRY L. MANN
SCHIFF HARDIN LLP
900 THIRD AVENUE
NEW YORK, NY 10022
(212) 753-5000

AMICUS
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BRIEF

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IN THE

SUPREME COURT OF THE UNITED STATES

BERNARD L. BILSKI AND RAND A. WARSAW,

Petitioners,

v.

DAVID J. KAPPOS, UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR, PATENT AND TRADEMARK OFFICE,

Respondent.

On Writ of Certiorari to the United States Court Of Appeals for the Federal Circuit

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BRIEF OF AMICI CURIAE

FOUNDATION FOR A FREE INFORMATION INFRASTRUCTURE, IP JUSTICE, AND FOUR GLOBAL SOFTWARE PROFESSIONALS AND BUSINESS LEADERS IN SUPPORT OF RESPONDENT

Allonn E. Levy
Hopkins & Carley
408.286.9800 (main)
70 South First Street
San Jose, CA 95113
COUNSEL OF RECORD

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I.

QUESTIONS PRESENTED

1. Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing (Machine-or-Transformation test), to be eligible for patenting under 35 U. S. C. §101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas".

2. Whether the Federal Circuit's Machine-or-Transformation test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U. S. C. § 273.

II.

STATEMENT OF INTEREST OF AMICI CURIAE[1]

A. About the Foundation for a Free Information Infrastructure

The Foundation for a Free Information Infrastructure (FFII) e. V. is a charitable association registered in Munich, Germany which is dedicated to the spread of data processing literacy. It funds the development of public information works based on copyright, free competition and open standards.

The FFII attained broad international recognition for its phrontistery role in the European debate on a software patent directive (2002-2005) and software-related patent reform. It is a registered observer at the World Intellectual Property Organization.

The association and its members aim to reduce friction costs and risks for software authors and to prevent dilution of property rights under the Berne Convention by territorial patent grants. To this end FFII is guided by

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[1] Pursuant to Sup. Ct. R. 37.6, amicus notes that no counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than amicus curiae, its members, or its counsel made a monetary contribution to its preparation or submission. Petitioners and Respondents have consented to the filing of this brief through blanket consent letters filed with the Clerk's Office.

Hayek's dictum that "it is necessary [. . .] not to apply a ready-made formula but to go back to the rationale of the market system and to decide for each class what the precise rights are to be which the government ought to protect. This is a task at least as much for economists as for lawyers."[2]

For digital markets, cheap, fast and narrow rights are sought. The interests of the association are improvements of the substantive patent rules and the examination process. A global challenge is to keep patent office bureaucracies manageable, and make them adapt to an acceleration of markets.

The FFII members who contributed to this Amicus Curiae Brief are entrepreneurs and programmers. They devoted their time to this project because they are directly affected by the economic impacts of patents.

B. About The Four Global Software Professionals and Business Leaders

Dr. rer. nat. Peter Gerwinski is an entrepreneur, software developer and physicist from Essen, Germany. He is founder and Managing Director of G-N-U GmbH and a contributor to the GNU Pascal programming language.

Laura Creighton is a Canadian-born entrepreneur and software developer from Gothenburg, Sweden. She is founder and Managing Director of Open End AB, which has developed the Eutaxia task organizing software, and engages in computer science research in the field of just-in-time compiler generation for dynamic programming languages.

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[2] Hayek, F. A. v., Individualism and Economic Order, Chicago, University of Chicago Press, 1949, 114

Mag. iur. Georg Jakob is a lawyer, business consultant and former University researcher and teacher from Salzburg, Austria, now living and working in Munich, Germany.

Dipl. Kfm. & M.A. André Rebentisch is a business intelligence and technology research specialist, currently residing in Wilhelmshaven, Germany.

These four business leaders are long-time FFII members and founders of the FFII's Global Patent Policy Research Group. Each has personally been affected by the beneficial and harmful effects of patents. Each joins this brief to voice concern about the dangers associated with unfettered grants of software and business method patents.

C. About IP Justice

IP Justice is an international civil liberties organization that promotes balanced intellectual property rights and protects freedom of expression. IP Justice is based in Silicon Valley, California with regional membership throughout the world. IP Justice is concerned about the potential impact the case pending before this Court may have on global policies, international treaties and trade agreements that address intellectual property rights. IP Justice has an interest in ensuring that traditional global limits are maintained on the reach of patent law to ensure that the proper balance is struck between the protection of past innovations without unduly hampering future innovations. It is precisely this delicate balance that is placed risk by proponents urging this Court to expand patent rights beyond the traditional timehonored rules set forth in the U.S. constitution and the long-standing precedent of this court.

IP Justice participates in a number of international law and policy arenas including the World Intellectual Property Organization (WIPO), the Internet Corporation for Assigned Names and Numbers (ICANN), and the United Nations Internet Governance Forum (IGF) among others. IP Justice has twice been called to testify at hearings before the US Copyright Office on the anti-circumvention provisions in the US Digital Millennium Copyright Act (DMCA). IP Justice has an international board of directors and is 501(c)(3) nonprofit public benefit organization that was founded in 2002 by its current Executive Director Robin Gross.

III.

SUMMARY OF ARGUMENT

The Court of Appeals for the Federal Circuit in *In Re Bilski* wisely followed the Machine-or-Transformation test to avoid running afoul of the constitutional and precedential safeguards in place to protect the free exchange of abstract ideas in the marketplace. These safeguards are particularly important when analyzing non-physical innovations such as software and business method innovations.

The properties of software and business methods are fundamentally different from those of machines and transformations. Economic and anecdotal evidence provides strong justification for the conclusion that certain patent claims on software algorithms, business methods, and other abstract matter – untethered to any machine or transformation – would stifle rather than promote the progress of the sciences and useful arts.

The Machine-or-Transformation test therefore provides a means to an end: A clear limit to patentable subject-matter in accordance with case law, which consistently rejects the patentability of *abstract ideas*. To avoid circumvention of the rule prohibiting patents on abstract ideas, it is necessary to apply patentability standards *to the claimed object* rather than to the patent claim *as a whole*:

1. An object that consists only of laws of nature, physical phenomena, and abstract ideas cannot be claimed in a patent, independent of the form in which it is claimed.

2. An object can only be claimed in a patent if it constitutes a new concrete realization of a machine or transformation.

Amici conclude this from their experience with the European *technicity* test which is discussed in greater detail below.

Plainly, with the potential reward of an unfettered monopoly, there exists great pecuniary incentive for special interests to attempt to place their thumb on the scale of justice in order to obtain that which has historically been prohibited. This court has long provided the guiding hand protecting society from the ills that would result from expanding the exclusionary power of patents beyond the boundaries set forth by the founding fathers and subsequent legislators. Amici now urge this court to continue that tradition and affirm the Machine-or-transformation test and to include certain additional safeguards that are set forth below.

IV.

ARGUMENT

In a globalized world, business activities crossing the oceans are commonplace, even for small enterprises. This is especially true in the software market where software can be transferred between continents at no noticeable cost via the Internet. Consequently, even a one-person software company serves customers around the globe and is affected by territorial patents. But there is an even more clear connection between U.S. Patent law and the laws of foreign countries. Countries the world over perpetually work to harmonize patent laws world-wide. The European Patent Office (EPO) is currently revising its strategy with respect to patents on software and business methods. The outcome of the *Bilski* case will be carefully followed and will necessarily affect the EPO's decisions on these important issues.

The *Bilski* case reaches the question of patentability of business methods and by extension other non-tangible subject matter such as software that is not connected to any machine or transformative use. This affects virtually everyone doing business in the United States or with the United States. If innovators are permitted to monopolize business practices, algorithms, or abstract ideas, untethered to any physical mechanism the damaging effects of these unconstrained monopolies will be far-reaching. There is good reason that this High Court and

European Parlament have both, thus far, rejected such a rule.

A. The Lower Court's test Properly Excludes Abstract Ideas From the field of Patentable Material.

Nearly 150 years ago this Court stated the truism: "An idea of itself is not patentable." *Rubber-tip Pencil v. Howard,* 87 U.S. (20 Wall.) 498, 507 (1874). For decades this court has held that subject matter that would effectively exclude market participants from employing laws of nature, abstract ideas, or mathematical algorithms cannot be protected by patent[3]. Conceptually these rules are clear. However, like any rules, as the marketplace of innovation changes, the same rules must be applied to different technological advances.

1. Key Distinctions Between Hardware And Software Patents.

Over the last decades, computer software has become a pervasive and ubiquitous tool in the global economic toolbox. Although the development of mechanical parts has been optimized over thousands of years, software is gaining ever increasing importance. The reason for this increase in innovation lies at least in part in the distinctions between hardware and software. Distinctions that are pivotal to an understanding of why software, on its own, has traditionally not be afforded patent protection.

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[3] *See e.g. Gottschalk v. Benson,* 409 U.S. 63 (1972), *Microsoft v. AT&T* 550 U.S. 437, 449 (2007).

Ease of Creation: One reason why software is being developed and propagated at a dramatic pace is that software is much easier, and therefore less costly, to create than hardware. Plainly, software is nothing more than a set of written instructions. By contrast, when a mechanical device is built, one has to contend with the laws of physics. No mechanical component is 100 % reliable. All lengths, diameters, etc. come with tolerances. Software also consists of components, but those components come in the form of "algorithms." Unlike physical components, algorithms are simply idealized mathematical expressions. These mathematical expressions have no tolerances or abrasion and are ubiquitous in the marketplace of ideas.

Ease of Scalability: Because of the differences in components, a mechanical device with 100 gears needs a physical redesign when a 101st gear needs to be added. This necessarily involves an added cost. By contrast, a piece of software can be extended to 10,000 "virtual gears" with no noticeable effort. It requires only the direction of a gifted programmer to provide the necessary expressions.

Ease of Portability: Because software is a set of instructions or expressions, those expressions can be easily manipulated and applied to accomplish nearly limitless tasks. These "expressive parts" are therefore very flexible and can be used in very different ways. Many of them can be used in fundamentally different types of software. For example, the same compression algorithm can be used in a drawing program, a cryptography system, a web server, a device driver, and much more.

In software development, it is commonplace to combine large existing parts from diverse sources —which in turn themselves consist of smaller and smaller parts —

to form an even larger system. For instance, you can create a minimalistic, but useable content management system by just putting together a file server and a web server. With hardware, it is much more difficult to combine the features of two completely different existing systems. For example, one cannot simply weld together a ship and an aircraft and expect the result to swim and to fly – while with software one *can* effectively create the analogous feat[4].

Ease of Duplication: The manufacturing of software is fundamentally different from that of mechanical devices. One important difference is that software can be copied without material degradation at no significant expense to the inventor[5]. In contrast, mechanical devices must be built one-by-one, often using materials and equipment which can pose at least some expense to the innovator.

a. Software And Business Methods Bear Little Risk of Unauthorized Reverse Engineering.

Some have argued that innovations in software require patent protection to guard against unauthorized reverse engineering[6]. As demonstrated below, that is not the case.

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[4] See also http://www.gnu.org/philosophy/software-patents.html.

[5] As discussed below, while ease of copying is often a concern for those seeking to protect their software innovations from unauthorized duplication, there exist robust legal protections against such unauthorized duplication. The additional layer of protection that would be offered by patent protection (if it were made available) would add no additional disincentive to the unscrupulous infringer.

Once an innovative automobile has been built, a competitor can save R&D expenses by purchasing one automobile and disassembling it to see how it works. However, the same is not possible with software. As an example, consider a software which calculates the surface A of a sphere with known radius r using the well-known formula A = 4 pi r^2.

To create this software, the author writes the so-called source code in a programming language. In the programming language "C" (ISO/IEC 9899:1999) this software can be written as follows:

```
/* sphere.c - Calculate the Surface of a Sphere */

#include <stdio.h>

#define pi 3.14159265

int main (void)

{

  float radius, surface;

  scanf ("%f", &radius);  /* read the radius */

  surface = 4.0 * pi * radius * radius;
```

---

[6] See for example the Brief of Amicus Curiae International Business Machines Corporation In Support of Neither Party filed in this action at fn. 22, p.23.

```
  printf ("%f\n", surface);  /* show result */

  return 0;  /* report success */

}
```

This source code cannot directly be executed by a computer. To make it executable, it is necessary to transform - to compile - it into binary code, which is a sequence of numbers which is difficult for humans to read.

A software developer who does not want to disclose how the software works or wants to retain the privilege to do any modifications on it, only distributes the binary code and keeps the source code as a trade secret.

There is in fact a process called "disassembling the software" which means to extract information out of the binary code. However, it is not feasible to retrieve a useful source code through disassembly. The following is the "C" equivalent of what can be extracted from the binary code of the "sphere" software above.

```
int main (void)

{

  float x1, x2;

  f1 ("%f", &x1);

  x2 = 12.5663706 * x1 * x1;

  f2 ("%f\n", x2);

  return 0;
}
```

In this "reconstructed source code" some important pieces of information are irretrievably lost,

- all comments (/* ... */ in "C"),

- the names "radius", "surface" of the variables,

- the names "scanf", "printf" of the functions, an

- the origin "4 pi" of the number "12.5663706".

Even in this most simple example, it would require extreme expertise and substantial guesswork or tria-and-error to recover the meaning of "x1", "x2", "f1", "f2" and of the number "12.5663706".

The size of the full source code of this program is 13 lines, including comments and empty lines. The typical size of a real-world program is between 10,000 and 10,000,000 lines of source code; some very large projects even reach 1,000,000,000 lines and above. Thus in realistic cases, there is no chance to reconstruct a useful source code from the binary code.

As a consequence, the task of software reverse engineering is extremely difficult. It is never done to save work, but only as a last resort in some special situations, for example when there are no other means to achieve interoperability. Moreover, legal protections exist for those who seek to bar reverse engineering. Thus, there is no meaningful risk of reverse engineering complex code and any risk that does exist would not be cured by the addition of *another*[7] legal barrier.

b. Software and Business Method Innovations Would Not Benefit From The "Disclosure" Aspect of Patents.

A key benefit of the patent system is the requirement that the innovator disclose his or her invention in the patent in order to enrich the body of public knowledge and presumably enhance future innovation[8]. While this aspect of patent policy applies to hardware patents, it does not apply to software.

A typical software patent does not disclose source code. It does not even cover a complete realization of a software system, but only an elementary component of software – an algorithm. This component of the greater source code provides no significant addition to the body of knowledge. While the source code could provide such knowledge, it commonly remains a trade secret.

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[7] Presumably those seeking to protect their software from reverse engineering have employed the existing legal protections afforded by the Uniform Trade Secrets Act and common law contract principles. (See e.g. California Civil Code §3426 *et seq.*). There is no reason that a miscreant bent on breaking either of these existing laws would suddenly be deterred by the added protection afforded under a new one (patent law).

[8] The disclosure required in exchange for obtaining a patent ensures that "the knowledge of the invention enures to the people" and "stimulate[s] ideas and the eventual development of further significant advances in the art." *Kewanee Oil Co.* v. *Bicron Corp.*, 416 U.S. 470, 481 (1974).

Nor is it realistic to expect every created algorithm to be patented (if such protection were afforded) or that those in the software industry would expend the time to review such disclosed algorithms if they were available through the patent office. Arguably unique algorithms are so ubiquitous that the current patent system would likely be strained to the breaking point if every software programmer were to truly invest the time and resources needed to obtain patent protection for every new and innovative algorithm created.

While patents do not disclose meaningful software innovations, software programmers have themselves created a voluntary system that does. The Free and Open Source Software (FOSS)[9] community provides a working system that encourages programmers to disclose their source code. FOSS is based on copyright When a software system is released under a FOSS license, the author deliberately discloses his source code under certain conditions. In exchange he gets access to a large code base of other FOSS. That way, even direct competitors can—and in fact do—pool their efforts to create better software. Competition takes place in terms of service quality, not of the code base. To enable this system to work, the "conditions" under which source code is disclosed must be crafted very carefully. One essential condition for FOSS is that it can be copied freely by everyone who has obtained it in a legal way[10]. In particular, there must not be any control over the number of copies. As soon as there are conditions which require control over the number of copies, FOSS cannot be used.

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[9] For more information about free software see http://www.gnu.org.

In sum, extending patents to software would neither encourage greater disclosure nor spur greater innovation. Those interested in safe disclosure already have a ready mechanism for doing so in FOSS. Those that choose not to disclose enjoy the protections afforded by copyright, licensing, and trade secret laws.

2. Economic Imperatives And Historical Lessons Weigh Against Overly Broad Patent Monopolies.

Patents--like any other "exclusive right to [. . .] writings and discoveries" — are intended to "promote the progress of science and useful arts".[11] The patent-monopoly is the "incentive" intended to entice the progress of science and useful arts. But this economic rationale of the patent system has lead to the false conclusion that since some patents further innovation, *more* patents necessarily further more innovation. But in reality the total private commercial value of patents equals their social costs in the form of an inefficient burden on a competitive market[12]. Thus, there is no "free lunch" in patenting. The "price" of granting each patent monopoly is real and should be weighed carefully.

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[10] The brief submitted by *amici* Lee A. Hollar and IEEE is decidedly wrong in its characterizations of FOSS. FOSS and its incompatibility with software patents has nothing to do with any similarity to "underdeveloped economies" and has no relation to the "cloning" of others' proprietary software. Brief of Professor Lee A. Hollar and IEEE-USA as Amici Curiae at p.21, n.31.

[11] Article 1, Section 8 U. S. Constitution, § 8, cl. 8

From an economic standpoint it is essential that subject matter that is awarded patent protection be "scarce" under laissez-faire conditions, and that more of that subject matter be produced as a result of the protection awarded. But when patents are awarded for ubiquitous subject matter, observers properly complain about "trivial" grants. For an economist seeking to engineer an incentive system based on awarding limited monopolies to successful innovators, the application of such monopolies to abundant matter does not make any sense. It limits the freedom of commercial action but actually stifles the progress of science and useful arts.

a. Reliving Past Mistakes.

Until 1623, before the Statute of Monopolies was enacted in the United Kingdom, patents were granted for almost any business activity, from the right to sell textiles to the import of spices or the export of goods[13]. Patents had become a way for the government to over-regulate and thereby interfere with the market in ways unrelated to the stated goals of the patent system. About four hundred years ago, the negative effects became so unbearable that patents were limited from business activity to engineering inventions.

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[12] Leading economists have often taken a critical view of even the current patent system. See e.g. Hayek, F. A. v., Individualism and Economic Order, Chicago, University of Chicago Press, 1949, 114; Milton Friedman, Capitalism and Freedom, Chicago (1962), p. 127; Joseph E. Stiglitz, Making Globalization work, New York (2006), p. 103 ff.

[13] "The English Statute of Monopolies of 1623 was intended to put an end to previous abuses under which patents granted under the Royal Prerogative had sometimes protected genuine technical innovations

As society has progressed it has come full circle on the issue of patents, with some, again, seeking ever-broadening interpretations of patentable technology. In October 2003, The Federal Trade Commission issued a report entitled: To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy. The Executive summary states: "A failure to strike the appropriate balance between competition and patent law and policy can harm innovation. For example, if patent law were to allow patents on 'obvious' inventions, that might have developed based on the obvious technology. [.] Conversely, competition policy can undermine the innovation that the patent system promotes if overzealous antitrust enforcement restricts the procompetitive use of a valid patent."[14]

(or useful foreign technologies newly copied and imported, which for England in the sixteenth and seventeenth centuries was far more important), but had equally been used to create private monopolies for royal favorites on such everyday items as starch, vinegar and playing cards." Christopher Wadlow, Utility and industrial applicability, in: Toshiko Takenaka (Ed.), Patent Law and Theory, A Handbook of Contemporary Research, Cheltenham, UK (2008), p. 360.

[14] FTC Report, executive summary, page 3

In joint FTC and Department of Justice hearings related the FTC report, participants "found much to praise in the current patent system",[15] but their findings indicated that "Some Modifications Are Needed to Maintain a Proper Balance of Competition and Patent Law and Policy"[16] Indeed, the summary transcripts contain a depressing, unrelenting tale of woe. In testimony after testimony, concerns were raised that the USPTO has been granting patents of questionable value. Some granted patents are considered too broad, while some are on trivialities. Still others are mistakenly granted on subject matter which is non-patentable in the first place. For many, disqualifying prior art exists, but the USPTO was plainly unaware of the existence of such art when the patent issued.

Other actors, sometimes characterized as "patent trolls", never innovate at all. Instead, they wait until others independently develop whatever technology they have patented or licensed, and then collect fees from the true innovators, who are trying to bring new products onto the market. Still other companies are accused of rushing to the patent office attempting to get a patent on whole industries, by virtue of being the first to claim an industry standard practice. Others are claiming mathematical algorithms which have always been the common heritage of all humanity. Indeed, it is not difficult to find patents that manage to suffer from all of these defects simultaneously. While such accusations have been in existence for as long as the patent system itself,[17] there is widespread belief that the impact of non-practicing entities ("patent trolls") is much greater today than it has ever been before.

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[15] FTC Report, executive summary, page 4

[16] FTC Report, executive summary, page 4, first conclusion

The Machine-or-Transformation test is one approach for a criterion to more clearly separate "good," permissible patents from the "bad" impermissible patents – hopefully during the patent application process long before such "bad" patents have a damaging effect on the marketplace.

b. Potential Effects of Extending Patent Protection to Software and Business Methods.

What happens if one grants exclusive rights on business or software components? Each grant of monopoly over the component part covers all uses of that component in all fields of programming or use. Since a complete software system, or a large business practice, consists of many thousands of components, there is a high risk that the software system or business practice will unknowingly violate any number of exclusive grants over various components. The result is a stifling of further innovation, an increase in transactional costs (such as insurance and litigation) for innovators, and ultimately the abandonment of research and developments by all but a few; precisely the opposite of what the patent statutes are intended to accomplish.

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[17] In 1895, George Baldwin Selden obtained a patent with a claim so broad that it literally encompassed most automobiles ever made—putting a gasoline engine on a carriage—despite the fact that he had never gone into production with a working model of an automobile. See Robert Patrick Merges and John Fitzgerald Duffy, Patent Law and Policy, Cases and Materials, Charlottesville (2002), pp 644-646 for more information about the Selden Patent.

To avoid this danger, software copyrights grant exclusive rights *not* on software components, but only on individual programs, i.e. realizations or expressions of software systems. Similarly, trade secrets protect the confidentiality agreed upon by the parties in which the "secret" is reposed. Neither mechanism grants a broad range of exclusivity that potentially forecloses innovation in an entire field.

An additional danger exists in granting software patents. Patent licenses typically require a fee per copy. For this reason, it is very difficult to obtain a patent license for FOSS. Accordingly, there is a long list of FOSS projects which have had to be terminated to evade the risk of a patent lawsuit.[18] These development risks are increased when the patent covers a standard file format or protocol. In such a case, even if there is a better or more efficient algorithm available than the patented one, there is no way around the patent without giving up interoperability,[19] and the patent effectively locks out FOSS from the field of programming where the standard is defined.

Software patents are in fact not patents on specific software *realizations*, but on abstract fundamental principles of programming – the *algorithms*. This brings an extremely high risk of unintentional patent infringement to software developers. A patent claim typically takes 10-100 lines to describe the algorithm in human language. Software systems consists of a large number of algorithms. A typical software system comprises 10,000 to 10,000,000 or even more lines of source code, which accounts for a minimum of 100 to 10,000 algorithms, each of which might (or might not) be covered by a patent. So instead of one patent covering one software realization, developers would be faced with a software realization covered by hundreds or thousands of patents on software *algorithms*. As a consequence, it will eventually become unfeasible to write software without infringing a large number of patents – a veritable minefield of lawsuits for even the most careful innovators.

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[18] See http://eupat.ffii.org/patents/effects/index.en.html.

[19] See the cases STAC, JPEG, MPEG, Dolby, VOIP, ASF, LZW, TTF, RSA, WWW, and RDF in footnote 11 above plus the examples in section 3.1.4 below.

B. A Clear Boundary Between Patentable and Non-Patentable material is Important for Continued Innovation.

To avoid the numerous dangers associated with extending the exclusive grant offered by patents to subject matter not *actually* covered by patent law it is imperative that lower courts and the Patent and Trademark Offices world-wide have the benefit of clearly defined boundaries.

1. Existing Tests For Determining the Boundaries of Patent Subject Matter.

Both Europe and the United States have heeded history's lessons and imposed limitations on patentable subject matter. The European Patent Convention, in its Art. 52(2)(c) expressly states that "schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers [...] as such [...]

shall not be regarded as [patentable] inventions". The United States, through this Court's rulings has similarly long limited the subject matter of patents to avoid abuse.

While many misquote the American rule as permitting patent protection for "anything under the sun that is made by man" the true rule states that anything made by man is patentable *except* for enumerated exceptions[20]. "The laws of nature, physical phenomena, and abstract ideas have been held not patentable." (*Id.*). It is for good reasons that, even in cases arguing for the broadest patentability, this need for limitations is endorsed.

This Court has already detailed how to translate the rules and limitations to the daily practice of granting patents. In *Gottschalk v. Benson*,[21] this Court held that a procedure for solving a given type of mathematical problem is known as an "algorithm". Allowing a patent on such a procedure would "wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself". Nevertheless, the mere presence of an algorithm in a solution shall not per se exclude the possibility of a patent being granted, as long as all other requirements of patentability are met.[22] As this court held in *Diamond v. Diehr*, (occasionally "*Diehr*") any claimed algorithm has to be treated as prior art. The patent can be granted only if the same claim as the algorithm also contains some other innovation that produces a useful, concrete and tangible result. *Diehr* also defined the term "algorithm:"

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[20] *Diamond v. Chakrabarty*, 447 U.S. 303, 309, (1980); see also, *Diamond v. Diehr*, 450 U. S. 175 (1981).

[21] *Gottschalk v. Benson*, 409 U. S. 63 (1972)

[22] *Parker v. Flook*, 437 U.S. 584 (1978); *Diamond v. Diehr*, 450 U. S. 175 (1981)

> "1. A fixed step-by-step procedure for accomplishing a given result; usually a simplified procedure for solving a complex problem, also a full statement of a finite number of steps. 2. A defined process or set of rules that leads [sic] and assures development of a desired output from a given input. A sequence of formulas and/or algebraic/logical steps to calculate or determine a given task; processing rules."[23]

As *Diehr* noted, no distinction may be drawn between the first and second definitions. Thus, in a very real sense this Court has already spoken on the issue now before it, finding that abstractions/logic/software cannot be claimed in a patent, absent the addition of other patentable subject matter within the claim.

Indeed, this Court has been clear and consistent in its pronouncements. It is the Federal Circuit Courts of Appeal that have been inconsistent. The United States Court of Appeals for the Federal Circuit in *In re Hiroyuki IWAHASHI*,[24] provides one such diversion from existing precedent:

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[23] Brief for Petitioner in *Diamond v. Bradley*, O.T. 1980, No. 79-855, p. 6, n. 12, quoting C. Sippl & R. Sippl, Computer Dictionary and Handbook 23 (2d ed. 1972).

[24] *In re Hiroyuki IWAHASHI, Yoshiki Nishioka and Mitsuhiro Hakaridani*, 12 U. S. P. Q. 2d 1908; 888 F.2d 1370 (1989)

> Over-concentration on the word "algorithm" alone, for example, may mislead. The Supreme Court carefully supplied a definition of the particular algorithm before it [in Benson], i.e., "[a] procedure for solving a given type of mathematical problem." The broader definition of algorithm is "a step-by-step procedure for solving a problem or accomplishing some end." Webster's New Collegiate Dictionary (1976).

The Court of Appeals thereby implied that there would exist mathematical, abstract algorithms as opposed to (non-mathematical, non-abstract) "applied" algorithms. This error was then reiterated and wholeheartedly adopted by the Circuit Court in *State Street*.[25]

> Today, we hold that the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces "a useful, concrete and tangible result"—a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.

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[25] *State Street Bank & Trust Co. v. Signature Financial Group Inc.*, 149 F. 3d 1368 (Fed. Cir. 1998)

The *State Street*[26] decision was contrary to a broad range of authorities including the holdings of *Gottschalk, Parker*[27], and *Diehr*. *State Street's* pronouncement that an algorithm that produces a particular result is protectable is directly contrary to the teachings of *Diehr*:

> [.] the algorithm is treated for 101 purposes as though it were a familiar part of the prior art; the claim is then examined to determine whether it discloses "some other inventive concept."

In other words, under *Diehr,* it is plain that the calculation itself *cannot* be claimed. It must be effectively discarded and the remaining claim terms must be analyzed in order to determine whether "some other inventive concept" exists, which can then be afforded patent protection.

Summarizing, the case law of the Supreme Court defined a clear line, in which algorithms could not be claimed on their own and had to be accompanied – in the same claim – by something else meeting the requirements of patentability. This is not unlike the decisions of the Board of Appeals of the European Patent Office, which interpreted the so-called "technology requirement" in an analogous way.[28]

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[26] As discussed below, *State Street's* damage did not stop at the water's edge. Seeking to harmonize its own laws with those of the United States, the European Patent Office has also relied upon *State Street's* broad, and ultimately misguided reading of U.S. patent law.

[27] 437 U.S. 584 (1978)

a. The European Approach: Art 52 EPC and Technicity

European law provides for an explicit exclusion of patents on software and business methods. Art 52 of the European Patent Convention (EPC) reads:

> "(2) The following in particular shall not be regarded as [patentable] inventions L...1:
>
> (c) schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers; [...]
>
> (3) The provisions of paragraph 2 shall exclude patentability of the subject-matter or activities referred to in that provision only to the extent to which a European patent application or European patent relates to such subject- matter or activities as such."

In light of Art 52(2)(c) of the EPC it may seem counterintuitive that any software patents would issue in

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[28] The Board of Appeals of the European Patent office only briefly diverged from this line of reasoning when it sought to harmonize its practice with the United States after *State Street Bank & Trust Co. v. Signature Financial Group Inc.*, 149 F. 3d 1368 (Fed. Cir. 1998). As discussed below, that issue has since been resolved by the European Parlament.

Europe. Yet, such patents have issued, calling into question the validity of those issued patents. This occurred because from 1998 onward, the European Patent Office changed its patent granting practice for software without regard to Art 52 (2) (3). Specifically, prior to 1998 – not unlike the United States prior to *State Street* – algorithms could not be claimed easily in Europe. But after 1998, the European Patent Office switched to an interpretation that left little to no room for the application for the exclusion of software found in Article 52.

As tension increased with respect to the European Patent Office's treatment of software patents, intense lobbying for a European Directive that would have effectively abrogated[29] Article 52 was commenced, most importantly by the European Patent Office itself. The European Commission then issued the proposal COM (2002) 92 final 2002/0047 (COD), 2002 which, if approved, would have effectively "cured" most of the dubious patents. However, the proposal was definitively refused on July 6,

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[29] Page 7 of the Directive proposal states that computer programs which have "a technical character [...] are not considered to fall under the exclusion in Article 52(2) as they are considered not to relate to programs for computers 'as such'." On the same page we find that "all programs when run in a computer are by definition technical (because a computer is a machine) [...]." In other words: all software would be technical, thus the exclusion by Art. 52(2) EPC would be void. This Directive proposal was rejected by the European Parliament on 6th July 2005 and was never implemented.

2005 by the European Parliament. Thus, currently, the prohibition against such patents found in Article 52 remains good law.

b. The Lower Court's Machine-or-Transformation Test

According to the Machine-or-Transformation patent eligibility test, a claim to a process qualifies to be considered for patenting only if it (1) is implemented with a particular machine, that is, one specifically devised and adapted to carry out the process in a way that is not concededly conventional and is not trivial; or else (2) transforms an article from one thing or state to another.

This test is a means to an end. It is there not to cross, but to define the border between patentable new and useful processes and non-patentable laws of nature, physical phenomena, and abstract ideas. This answers the first question presented by the petitioners.

Regarding the second question, the American Inventor Protection Act in 1999 introduced a limited "prior use" defense in American patent law, specifically for "methods of doing or conducting business". This regulation, inserted as § 273 into the American Patent Act, implicitly acknowledges the existence of business methods, by virtue of its limitation to those methods.

Unlike the second question of the petitioners suggests, 35 U. S. C. § 273 does not reflect a "clear Congressional intent that patents protect 'method[s] of doing or conducting business.'" The regulation only recognizes business method patents as a fact and tries to bring their economic impact under control by setting a limit.

This is achieved by the Machine-or-Transformation test: setting a limit. It does not contradict 35 U. S. C. § 273, but complements it.

On the other hand one must take very seriously the concerns raised by Judge Mayer in his dissent to this test.

> "Bilski, for example, could simply add a requirement that a commodity consumer install a meter to record commodity consumption. He could then argue that installation of this meter was a 'physical transformation'."

The same kind of "clever draftsmanship" has been advocated in Europe by the EPO, which for many years saw its job as one of "helping its clients, the would- be patent holders, apply for and *receive* patents" and featured on its website a document which described in detail how to circumvent Art. 52(2) EPC.

Neither the EPO, nor the PTO, nor the Federal Circuit Courts should be in the business of "helping" applicants gain patent protection. As discussed in the earlier portion of this brief, there are very real cost to society for each patent that issues. Those costs reach unacceptably high levels when the patent has the effect of excluding others from participation in abstract ideas, laws of nature, physical phenomena and the like[30].

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[30] *Diamond v. Chakrabarty,* 447 U.S. 303, 309, (1980); see also, *Diamond v. Diehr*, 450 U. S. 175 (1981).

2. Improving the Patentability Tests

The purpose of the Machine-or-Transformation test, reiterated in *Bilski*, is to limit patentability in a manner consistent with existing Supreme Court precedent and to exclude undesired patent applications. To serve this purpose, *Amici* propose that the Machine-or-Transformation test be supplemented with the following measures:

1. The Machine-or-Transformation test must be applied to the claimed object rather than to the patent claim as a whole. An object can only be claimed in a patent if it constitutes a new, concrete realization of a machine or transformation.

   Without these further requirements, patent claims may incidentally involve machines or transformations which are irrelevant to the claim, while still effectively working to impermissibly patent laws of nature, physical phenomenon or abstract ideas.

2. In applying the "suggestion test", an ability to combine or modify prior art references should be assumed that is consistent with ordinary creativity and problem-solving skills in the art.

   The suggestion test states that if the prior art would have already suggested the claimed invention, then the claimed invention is obvious. However, the participants at the FTC/DOJ Hearings expressed concern with some recent applications of the suggestion test. To show that a claimed invention is obvious, the USPTO had to point to particular items of prior art that concretely suggest how to combine all of the features of a claimed invention. It is those fields where the combining of elements is most straightforward that the chances are least that one can find an existing document that outlines that particular combination, simply because nobody having ordinary skill in the art would ever require instruction at that level. How to combine existing elements would be considered "too obvious" to need mention.

3. An expanded version of the suggestion test is relevant to all inventions that use a computer. Simply writing a computer program and then running it on a computer is not novel, under the meaning of patent law. And doing so is obvious, again under the meaning of patent law.

These days, we experience a similar dawn of mankind as Henry Ford experienced 100 years ago.[31] Back then it was completely obvious for an engineer to put an engine on a carriage. In these days, it is completely obvious for someone skilled in the art of computer programming to convert mathematical principles into computer programs. Thus while what *Bilski* has done may be termed "innovative" in an entrepreneurial sense, it is in no way innovative in the sense of patent law

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[31] *See also* the FTC report, executive summary, page 12

4. The "commercial success test" should be expressly abandoned. This test states that in some circumstances, courts may consider the commercial success of a claimed invention to indicate that it was not obvious. It must have satisfied an unmet need, which was not obvious to anybody else, or else they would have already been satisfying it.

> Commercial success comes from many factors, many of which have nothing to do with the claimed invention, e.g. Marketing, advertising, a pre-existent dominant position, etc. Henry Ford, after all, claimed that his business success was based on the completely obvious idea of putting a gasoline engine on a chassis. His great success arose from other factors.

These minor modifications or clarifications to the existing test will only serve to better refine the existing law to ensure that patent protection continues to serve its intended purposes while excluding undesirable applications for material that ultimately is not entitled to patent protection.

V.

CONCLUSION

For the foregoing reasons *Amici* respectfully urge this court to re-affirm its long-standing rules prohibiting expansion of patent protection to subject matter that has the effect of precluding innovators from employing abstract ideas, algorithms, laws of nature and the like. The Federal Circuit's Machine-or-Transformation test, in particular when slightly modified as suggested herein, provides the clarity needed with respect to business method and software patents. As such, this Court should Affirm.

Dated: October 2, 2009

COUNSEL OF RECORD
Allonn E. Levy
Hopkins & Carley
408.286.9800 (main)
70 South First Street
San Jose, CA 95113

As Counsel *Amici Curiae:*

Foundation for a Free
Information Infrastructure,

IP Justice,

Dr. rer. nat. Peter Gerwinski ,
Laura Creighton,
Mag. iur. Georg Jakob,
Dipl. Kfm. & M.A. André
Rebentisch

AMICUS
CURIAE
BRIEF

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In The
Supreme Court of the United States

◆

BERNARD L. BILSKI and RAND A. WARSAW,

Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY
OF COMMERCE FOR INTELLECTUAL PROPERTY
AND ACTING DIRECTOR OF THE UNITED STATES
PATENT AND TRADEMARK OFFICE,

Respondent.

◆

**On Writ Of Certiorari To The
United States Court Of Appeals
For The Federal Circuit**

◆

BRIEF OF FRANKLIN PIERCE LAW CENTER AS AMICUS CURIAE IN SUPPORT OF PETITIONERS

◆

Of Counsel:
J. JEFFREY HAWLEY
Director Amicus Brief Clinic
Professor of Law
THOMAS G. FIELD, JR.
Professor of Law
FRANKLIN PIERCE
LAW CENTER
2 White Street
Concord, NH 03301
(603) 228-1541
Amicus Curiae

ANN M. MCCRACKIN
Counsel of Record
Director Patent
Prosecution Program
Professor of Law
FRANKLIN PIERCE
LAW CENTER
2 White Street
Concord, NH 03301
(603) 513-5239

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INTEREST OF AMICUS CURIAE[1]

The Franklin Pierce Law Center (FPLC) is an independent law school with a long history of intellectual property expertise. The intellectual property faculty of FPLC has authored many scholarly papers and has filed amicus briefs in this Court as well as lower courts. FPLC has established an Intellectual Property Amicus Brief Clinic. With faculty guidance and student participation, the Clinic seeks to file amicus briefs that will lead to the development and predictable application of intellectual property law to promote innovation and competition. The Clinic selects cases where it is hoped that the amicus brief it submits will contribute important perspectives that might not be adequately represented by the parties.

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[1] The parties have consented to the filing of this brief. The Petitioner has filed a general consent for amicus curiae briefs with the Court. Consent has been obtained from the Solicitor General to file this brief.

Pursuant to this Court's Rule 37.6, amicus represents that this brief was not authored in whole or in part by counsel for any party. FPLC discloses that it maintains an Advisory Committee on Intellectual Property (ACIP) that includes representatives from industry, trade organizations and various law firms. Until recently, the chairman of ACIP was Ronald Myrick who participated in the preparation of the Petitioner's brief. However, neither Mr. Myrick nor any other non-faculty member of ACIP played any role in the consideration of whether to file this brief nor any role in its preparation. No person or entity other than FPLC has made any monetary contribution to its preparation or submission.

FPLC expressly declines to take any position regarding the ultimate conclusion with respect to the patentability of Petitioners' claims. More particularly, FPLC takes no position regarding the novelty or unobviousness of Petitioners' claims nor any position regarding whether their invention is adequately described in their application. The only issue of concern to FPLC in this case is the test for determining the eligibility of the method claims under the provisions of 35 U.S.C. § 101. FPLC believes that the mandate for the patent system found in the Constitution has been broadly implemented by Congress. This Court has repeatedly recognized this expansive implementation. The decision below is not consistent with this broad mandate. The decision below narrowly restricts the type of methods that are eligible for patent protection. Implementation of the Court of Appeals for the Federal Circuit's (CAFC) decision in this case would a) disturb existing property rights and b) severely decrease incentives for further innovation.

◆

SUMMARY OF THE ARGUMENT

In the decision below, the CAFC has established the "machine-or-transformation" test to determine whether a method is patentable under the provisions of 35 U.S.C. § 101. This Court has repeatedly confirmed that Congress intends 35 U.S.C. § 101 to be interpreted broadly, leaving it up to other parts of the statute to weed out inventions not worthy of patent protection. Up until this recent decision, the CAFC has followed the Court in its application of the broad standard for patentability. In fact, the exact test that the CAFC now says is the exclusive test for patent eligible subject matter of methods has been considered and rejected by this Court as an exclusive test.

Since the Court has last taken up the issue of patent eligible subject matter under 35 U.S.C. § 101, two industries the Court weighed in on, biotechnology and software, have been high growth areas in the U.S. market. The United States remains at the forefront of these fields due, at least in part, to these broad intellectual property rights confirmed by this Court.

In recent years, this Court has dealt with cases that have involved computer software and "business methods" without difficulty. The provisions of 35 U.S.C. § 101 are and should be a coarse filter leaving to other parts of 35 U.S.C. the task of insuring that only worthy inventions receive patent protection.

Since this Court's last pronouncements on the topic of 35 U.S.C. § 101, there have been several critical studies of the patent system. None have suggested a change to the concept that "anything under the sun made by man" should be patent eligible. As a result, even with ample opportunity to do so, Congress has chosen to leave 35 U.S.C. § 101 alone. In fact, Congress has acknowledged that "business methods," all of which will have difficulty under the CAFC's "machine-or-transformation" test, are indeed patentable subject matter. 35 U.S.C. § 273 recognizes the existence of "a method of doing or conducting business" and provides for a prior user right. Last year, there was a proposal in Congress to limit damages for tax planning methods. The solution to the perceived problem was to limit damages, not redefine methods. Notably, the measure did not pass.

For ten years, the CAFC used the "useful, concrete and tangible result" test for determining whether or not an invention was directed to an "abstract idea" – one of the prohibited areas defined by this Court. That test has served well. That test has been followed in numerous cases in the CAFC and has been consistently applied in the Patent Office by the Board of Patent Appeals and Interferences. There is an expectation on the part of thousands of patentees that their inventions are adequately protected. That is now all in question.

Clearly, the Patent Office initially struggled with "business methods." Now, however, the Patent Office has developed examination guidelines and memoranda following this Court's and the CAFC's precedents. Examiners have been trained, new examiners with appropriate business backgrounds have been hired and collections of prior art have been established. As a result, the allowance rate in the area of the Patent Office dealing with "business methods" is in the 20% range compared to the average allowance rate for all areas of the Patent Office which for 30 of the last 34 years has been higher than 60%. The Patent Office is now clearly able to apply all of the sections of the statute to this type of invention.

FPLC urges this Court to overturn the decision below and to reaffirm that only "laws of nature, natural phenomena and abstract ideas" are not patent eligible. With respect to methods, we urge that this Court confirm that a "useful, concrete and tangible result" test is adequate to exclude abstract ideas.

◆

ARGUMENT

I. The Supreme Court Should Confirm A Broad Standard For Patentability Of Method Claims

1. Broad Patentability Standards Have Served The Country Well

The Constitution, Article I, Section 8, Clause 8, authorizes Congress to establish a patent system, "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." The question of exactly what constitutes the type of invention eligible for patent protection has been implemented expansively by Congress. Section 101 of 35 U.S.C. defines patentable subject matter as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.[2]

This Court has acknowledged that Congress intended statutory subject matter to "include anything under the sun made by man" citing the Committee Reports for the 1952 revision of the Patent Act.[3] The last decisions of this Court relating to patentable subject matter placed only logical and understandable limits on patentable subject matter excepting only "laws of nature, natural phenomena, and abstract ideas."[4] Since *Chakrabarty* and *Diehr*, industries affected by those decisions have thrived.

2. Permitting Biotechnology Patents Spawned An Industry

The dawn of the modern era in biotechnology is widely attributed to the 1970 invention of the method of recombinant DNA by Cohen and Boyer.[5] A short 10 years later, this Court interpreted 35 U.S.C. § 101 broadly and held that something could be patentable even if it were living. While the *Chakrabarty* invention was directed to a "manufacture" within the meaning of 35 U.S.C. § 101, we believe that this decision sent a strong signal.

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[2] 35 U.S.C. § 101 (2006).

[3] S. Rep. No. 82-1979, at 5 (1952).

[4] *Diamond v. Diehr*, 450 U.S. 175, 182, 185 (1981); *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980).

[5] Biotechnology Industry Organization, Biotechnology Industry Facts, http://bio.org/speeches/pubs/er/statistics.asp (last visited July 28, 2009).

In *Chakrabarty*, this Court acknowledged, "Congress plainly contemplated that the patent laws be given wide scope."[6] Just as the Patent Office opposes the patentability of "business methods" today, so did Congress oppose the invention in *Chakrabarty*.[7]

What has been the result? While the biotechnology industry is hard to define and is constantly changing, one report puts the number of biotechnology companies, *in the United States*, at 1,452 as of December 2006. Publicly traded U.S. biotechnology companies spent $27.1B on research in 2006. Employment in the U.S. was 180,000 in 2006, and these were generally high value jobs. The market cap of the publicly traded U.S. biotechnology companies was $360B as of April 2008.[8] In spite of the naysayers at the time,[9] this Court's confirmation of the broad scope of patentable subject matter to include living things was at best a resounding success in promoting the constitutional purpose in the United States. It clearly was not an impediment.

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[6] 447 U.S. at 308.

[7] *Id.* at 306-07.

[8] Biotechnology Industry Organization, *supra* note 5.

[9] Brief for The People's Business Commission as Amicus Curiae Supporting Appellant, *Diamond v. Chakrabarty*, 447 U.S. 303 (1980) (No. 79-136).

3. The Software Industry In The United States Is Thriving

The other "success story" is illustrated by the aftermath of this Court's decision in *Diehr*. *Diehr* did involve a method – a programmable process or "software." Similar to restrictions on certain biotechnology inventions, other countries impose severe restrictions such that the patenting of software is almost impossible.[10] Like the situation with *Chakrabarty*, the Patent Office opposed the patentability of the invention in *Diehr*.[11] Like the situation with *Chakrabarty*, the naysayers believed that the patenting of software would mean the end of the industry.[12]

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[10] *E.g.* Convention on the Grant of European Patents (European Patent Convention), arts. 52(2) and 52(3), Oct. 5, 1973, 1065 U.N.T.S. 255, 271-72, *available at* http://treaties.un.org/doc/Publication/UNTS/Volume%201065/volume-1065-I-16208-English.pdf (explicitly excludes from patentability "programs for computers as such"); Agreement On Trade-Related Aspects of Intellectual Property Rights [TRIPS Agreement] pt. II § 5 arts. 27(2) and 27(3), Apr. 15, 1994, 33 I.L.M. 1197, 1208, *available at* http://www.wto.org/english/docs_e/legal_e/27-trips.pdf (allowing countries to exclude certain subject matter). The U.S. has chosen not to adopt those exclusions.

[11] 450 U.S. at 181.

What has been the result? In 2008, 7 out of 10 of the largest software companies in the world were U.S. based.[13] In 2007, 1662 patents were issued to Microsoft; in 1984, they were not in the top 200 companies receiving patents, thus, fewer than 38 patents were issued to Microsoft.[14] At least 17,000 applications that were published in 2008 and at least 7200 patents that issued in 2008 contained at least one claim directed to software.[15] The top 5 companies having patents in the software class 717 in the Patent

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[12] *See id.* at 291 (Stevens, J., dissenting) (discussing critics of policy of patenting software).

[13] *The Global 2000*, Forbes, Apr. 2, 2008, http://www.forbes.com/lists/2008/18/biz_2000global08_The-Global-2000_IndName_17.html.

[14] Intellectual Property Owners Association, *Top 300 Organizations Granted U.S. Patents in 2007* 2, *available at* http://www.ipo.org/AM/TemplateRedirect.cfm?template=/CM/ContentDisplay.cfm&ContentID=18241 (2008); Intellectual Property Owners Association, *Top 200 Organizations*, *available at* http://www.ipo.org/AM/TemplateRedirect.cfm?template=/CM/ContentDisplay.cfm&ContentID=3377 (1985).

[15] Ann M. McCrackin, *Trends in Software and Business Method Patents*, in Electronic and Software Patents: Law and Practice, §§ 1.01-.05 (2d ed. Supp. forthcoming 2009). The chart in Appendix 1 titled "Software Beauregard Claim Patenting Over Time" shows the total number of patents granted and applications published between 1996 and 2008 by the USPTO that contain a Beauregard-type claim to computer software.

Office are U.S. companies.[16] In 1996, only 149 patents issued into Class 717. In 2008, 1156 patents issued and 1723 patent applications were published.[17] Is all of this patent activity a bad thing? In 2007, Professor Merges from the University of California published a paper concluding that entry and competition in the software industry is robust.[18] The abstract is revealing:

> In the 1980s and early 1990s, it was commonly said that patents would severely damage the software industry. . . . I conclude that the early predictions were wrong. This helps explain why we are experiencing what might be called the "normalization" of software patents. Now, the frontier legal issues pertaining to software no longer center on whether it should be patentable in

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[16] *Id.* at 1-9 (IBM, Microsoft, Sun Microsystems, HP and Intel). The chart in Appendix 1 titled "Top 15 Assignees in Software Class 717" lists the top assignees for software patents granted in the U.S. in class 717. The horizontal bar represents the number of granted patents from class 717 assigned to a particular assignee between 1996 and 2008.

[17] *Id.* at 1-11. Class 717 is one of many Patent Office classes with patents directed to software. Analysis of Class 717 shows general trends in the software field. Analysis using additional or different Patent Office classes is expected to show similar trends. The chart in Appendix 1 titled "Software Patenting Over Time in Class 717" shows the combined number of patents granted and applications published in Class 717 from 1996 through 2008.

[18] Robert P. Merges, *Software and Patent Scope: A Report from the Middle Innings*, 85 Tex. L. Rev. 1627 (2007).

> the first place. . . . This serves as an interesting case study in how software firms are acquiring and using patents in their competitive strategies. The overall theme of the Article is normalization: the legal system is integrating software into the fabric of patent law, and software firms are integrating patents into the competitive fabric of the industry.[19]

In her dissent, Circuit Judge Newman takes notice of the success of the software industry in the United States: "By revenue estimates, in 2005 the software and information sectors constituted the fourth largest industry in the United States, with significantly faster growth than the overall U.S. economy."[20]

As with biotechnology, the robust protection of software inventions has been a boon to innovation and to U.S. industry. As with biotechnology employment, jobs in the innovative software industry tend to be high value jobs.

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[19] *Id.* at 1627.

[20] *In re Bilski*, 545 F.3d 943, 992 (Fed. Cir. 2008) (en banc) (Newman, J., dissenting) (citing Software & Info. Indus. Ass'n, Software and Information: Driving the Knowledge Economy 7-8 (2008), http://www.siia.net/estore/globecon-08.pdf), *cert. granted*, 77 U.S.L.W. 3442 (U.S. Jun. 1, 2009) (No. 08-964).

4. There Is Much Confusion As To The Applicability Of The Machine-Or-Transformation Test To Claims In Statutory Categories Other Than The Process Category

The courts and the Patent Office have already applied the *Bilski* "machine-or-transformation" test to numerous patents and pending applications. Although the CAFC held that the machine-or-transformation test is the applicable test to determine whether a *method* claim is drawn to patent eligible subject matter under 35 U.S.C. § 101,[21] the courts and the Patent Office are applying the test to claims that are in statutory categories other than the process category.[22] For example, the U.S. District

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[21] *Id.* at 949.

[22] *Every Penny Counts, Inc. v. Bank of America Corp.*, No. 2:07-cv-042, slip op. (M.D. Fla. May 27, 2009) (Held a "system" claim invalid in view of *Bilski*); *Ex parte Mitchell*, No. 2008-2012 (B.P.A.I. Feb. 23, 2009) (Held that a claim to an information processing "system" failed the machine-or-transformation test); *Ex parte Cornea-Hasegan*, No. 2008-4742 (B.P.A.I. Jan. 13, 2009) (Held the "computer readable media including program instructions" of claim 18 is not statutory subject matter).

Yet another example, in *Ex parte Atkin*, Appeal 2008-4352, 2009 WL 247868 (B.P.A.I. Jan. 30, 2009) the Board of Patent Appeals and Interferences (BPAI) reviewed a system claim which has also been considered a machine for purposes of the categories of patentable subject matter defined in 35 U.S.C. § 101. Although the Examiner had not rejected the system claim under 35 U.S.C. § 101, the BPAI indicated that the system claim in *Atkin* was not directed to patentable-eligible subject matter as

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Court for the Northern District of California recently applied the machine-or-transformation test to a computer readable medium claim.[23] A computer readable medium claim is drawn to an article, which is in a different statutory category than a process. As a result of these various decisions, there is much uncertainty among patent applicants as to the applicability of the machine-or-transformation test to claims in statutory categories other than the process category. [24]

5. In Contexts Other Than Patentable Subject Matter, This Court Has Had No Difficulty Dealing With A Broad Range Of Business Related Claims In Recent Cases

In *Markman v. Westview Instruments, Inc.*,[25] the patented invention was to a system for inventory control, arguably a "business method."[26] Query

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defined in *Bilski* and added a new grounds of rejection under 35 U.S.C. § 101 for the system claim.

[23] *CyberSource Corp. v. Retail Decisions, Inc.*, No. C 04-03268 MHP, 2009 WL 815448 (N.D. Cal. Mar. 27, 2009), *appeal docketed*, No. 2009-1358 (Fed. Cir. May 22, 2009).

[24] More information about claim types and claims generally can be found in Appendix 2.

[25] 517 U.S. 370 (1996).

[26] In fact, the claims in *Markman* are "system" claims. "System" claims can be thought of as dispersed machine components that interact with each other. The significant limitations in the system claims in *Markman* are in fact means-plus-function

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whether the claimed invention in *Markman* would pass the CAFC's "machine-or-transformation" test, particularly since the test has already been expanded so as to be applied to non-method claims? The issue was claim interpretation and more particularly, whether claim interpretation was an issue for the jury or the court. This Court could have remanded *Markman* for a determination of whether the subject matter was patentable under 35 U.S.C. § 101; it did not.

In *Microsoft Corp. v. AT&T Corp.*,[27] the patented invention was to AT&T's speech processing computer.[28] The issue however, was whether or not the software sent by Microsoft to foreign manufacturers was a "component" within the meaning of § 271(f). While it found otherwise in the case before it, this Court acknowledged that software could be a component:

> Until it is expressed as a computer-readable "copy," e.g., on a CD-ROM, Windows software – indeed any software detached from an activating medium – remains uncombinable. It cannot be inserted into a CD-ROM drive or

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limitations written in terms of a "means for" performing a specific function. Claim 1 of the Markman reissue patent is reproduced in Appendix 3.

[27] 550 U.S. 437 (2007).

[28] The AT&T patents contain a number of claim types, including "speech processor" claims and apparatus claims. A representative method claim is reproduced in Appendix 3.

> downloaded from the Internet; it cannot be installed or executed on a computer. Abstract software code is an idea without physical embodiment, and as such, it does not match §271(f)'s categorization: "components" amenable to "combination."[29]

By implication, while software code might be abstract, where it is on computer readable media, it is not. As noted above, even in its short life so far, the "machine-or-transformation" test in the decision below has already been used to reject article claims directed to computer instructions on computer readable media. Clearly, the "machine-or-transformation" test for methods is overly broad if some believe it can be applied in such a manner.

In *eBay Inc. v. MercExchange, L.L.C.*,[30] the claimed invention was to an online auction method. While couched in terms of a "system," this Court characterized the invention as "a business method patent for an electronic market designed to facilitate the sale of goods between private participants."[31] Query whether the claimed invention in *eBay* would pass the CAFC's "machine-or-transformation" test? Lower courts had been able to deal with the MercExchange claims and had found the patent to be valid and infringed. This Court found that the test employed by the CAFC for determining whether an injunction should issue was too rigid and remanded for a consideration of traditional equitable factors. This Court could have remanded *eBay* for a determination of whether the subject matter was patentable under 35 U.S.C. § 101; it did not.

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[29] *Microsoft*, 550 U.S. at 449.

[30] 547 U.S. 388 (2006).

[31] *Id.* at 390. Claim 1 of the MercExchange patent, U.S. Patent No. 5,845,265, is reproduced in Appendix 3.

In *Quanta Computer, Inc. v. LG Electronics, Inc.*,[32] the inventions involved several computer implemented methods, as described by the Court:

> When copies of data are stored in both the cache and main memory, problems may arise when one copy is changed but the other still contains the original "stale" version of the data. [U.S. Patent No. 4,939,641] addresses this problem. . . . [U.S. Patent No. 5,379,379] relates to the coordination of requests to read from, and write to, main memory. . . . [U.S. Patent No. 5,077,733] addresses the problem of managing the data traffic on a bus connecting two computer components, so that no one device monopolizes the bus.[33]

All of the methods are carried out on a general purpose computer having standard components.

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[32] 128 S. Ct. 2109 (2008).

[33] *Id.* at 2113-14 (internal citations omitted). The claims in U.S. Patent No. 4,939,641 are, in fact, "system" claims. U.S. Patent No. 5,379,379 contains claims to a "memory control unit," a "system" and various methods. Independent Claim 7 of U.S. Patent No. 5,379,379 is reproduced in Appendix 3. U.S. Patent No. 5,077,733 contains claims to both "apparatus" and "method" inventions.

Query whether the claimed method inventions in *Quanta* would pass the CAFC's "machine-or-transformation" test?

One of the issues in *Quanta* was whether the "patent exhaustion" doctrine applied to method claims. This Court held that it does.

> Nothing in this Court's approach to patent exhaustion supports LGE's argument that method patents cannot be exhausted. It is true that a patented method may not be sold in the same way as an article or device, but methods nonetheless may be "embodied" in a product, the sale of which exhausts patent rights. Our precedents do not differentiate transactions involving embodiments of patented methods or processes from those involving patented apparatuses or materials.[34]

This Court could have remanded *Quanta* for a determination of whether the subject matter was patentable under 35 U.S.C. § 101; it did not.

6. This Court Has Already Considered And Rejected The Test Now Adopted By The CAFC

In *Gottschalk v. Benson*,[35] this Court found that a process claim directed to a mathematical algorithm was non-statutory subject matter because "the 'process' claim [was] so abstract and sweeping as to cover both known and unknown uses of the BCD to pure-binary conversion."[36] That language, however, seems less addressed to subject matter than it is to the scope of claims in relationship to the scope of the teaching. This is, as well it should be, a recurring consideration. In a case from this Court in 1853, *O'Reilly v. Morse*[37] it is said that:

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[34] 128 S. Ct. at 2117.

[35] 409 U.S. 63 (1972).

> Whoever discovers that a certain useful result . . . is entitled to a patent for it; provided he specifies the means he uses in a manner so full and exact, that any one skilled in the science to which it appertains, can, by using the means he specifies, without any addition to, or subtraction from them, produce precisely the result he describes. . . . And any one may lawfully accomplish the same end without infringing the patent, if he uses means substantially different from those described. Indeed, if the eighth claim of the patentee can be maintained, there was no necessity for any specification, further than to say that he had discovered that, by using the motive power of electro-magnetism, he could print intelligible characters at any distance.[38]

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[36] *Id.* at 68.

[37] 56 U.S. (15 How.) 62 (1853).

[38] *Id.* at 109-10.

Some then construed that opinion to restrict patent eligible subject matter. *Tilghman v. Proctor*,[39] for example, states:

> it has been supposed that the decision in *O'Reilly v. Morse* was adverse to patents for mere processes. The mistake has undoubtedly arisen from confounding a patent for a process with a patent for a mere principle. We think that a careful examination of the judgment in that case will show that nothing adverse to patents for processes is contained in it. The eighth claim of Morse's patent was held to be invalid, because it was regarded by the court as being not for a process, but for a mere principle.[40]

The opinion elucidates the meaning of "principle" by stating, "It was not a claim of any particular machinery, nor a claim of any particular process for utilizing the power; but a claim of the power itself, – a claim put forward on the ground that the patentee was the first to discover that it could be thus employed."[41] Thus, from the beginning, permissible subject matter has been confounded with other matters such as the permissible scope of protection.

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[39] 102 U.S. 707 (1880).

[40] *Id.* at 726.

[41] *Id.* at 726-27.

In *Benson,* this Court considered the test that the CAFC now says is the only permissible test:

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a "different state or thing". We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents. . . . It is said that we freeze process patents to old technologies, leaving no room for the revelations of the new, onrushing technology. Such is not our purpose.[42]

7. 35 U.S.C. § 101 Should Be A Coarse Filter, To Be Applied Along With Other Criteria To Insure That The Statutory Purpose Is Met

There are numerous other statutory requirements that must be met before a patent is awarded in addition to the expansive definition of patentable subject matter found in 35 U.S.C. § 101. The invention itself must be new, 35 U.S.C. § 102,[43] useful, 35 U.S.C. § 101, and unobvious, 35 U.S.C. § 103.[44] To get the patent, the applicant must describe the invention, must enable the full scope of the claims and must disclose the best mode, 35 U.S.C. § 112.[45]

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[42] *Benson,* 409 U.S. at 71.

[43] "New" and "Useful" are both found in 35 U.S.C. § 101: "New" is extensively defined in 35 U.S.C. § 102.

[44] 35 U.S.C. § 103(a).

These statutory provisions, when properly applied by the Patent Office and the courts, stand as strong barriers to the grant of exclusive rights that do not promote the statutory objectives. For example, the "obviousness" standard was recently reviewed by this Court in *KSR Intern. Co. v. Teleflex Inc.*[46] By allowing a finding that an invention is obvious in more situations than would the CAFC's "teaching-suggestion-motivation" test, this Court "raised the bar" for patentability under 35 U.S.C. § 103.

The concept of "new" has been able to change with the times so as to maintain the "new" requirement as a strong barrier. For example, 35 U.S.C. § 102(a) and (b) both refer to "printed publication." In the modern Internet age, a great deal of information is available that is neither "printed" nor "published" as those terms were understood when the statute was enacted. Never-the-less, if a document is "reasonably accessible" it qualifies as prior art under 35 U.S.C. § 102(a) or (b) as a "printed publication."[47]

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[45] 35 U.S.C. § 112 ¶ 1.

[46] 550 U.S. 398 (2007).

[47] *SRI International v. Internet Security Systems*, 511 F.3d 1186 (Fed. Cir. 2008). It is noted in passing that the claims at issue in *SRI* were to "[a] computer-automated method of hierarchical event monitoring and analysis within an enterprise network including deploying network monitors in the enterprise network, detecting, by the network monitors, suspicious network

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So too the concept of patentable subject matter should be able to adapt to various method types. This is exactly what this Court pronounced in *Benson*.

8. There Has Been Adequate Opportunity For Congress To Amend The Statute In The Face Of Extensive Studies And Ongoing Developments, And It Has Not Chosen To Do So

A. Recent Studies Of The Patent System Have Not Recommended Changes To The Definition Of Patentable Subject Matter

Over a 10 year period, the National Academy of Sciences (NAS) undertook an extensive study of the patent system. The result was a report, published in 2004, that concluded that there were numerous aspects of the U.S. patent system that could use improvement.[48] However, the scope of patentable subject matter was not one of them, despite the fact that much of the study and the final report were after *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*,[49] ending speculation on whether there was a "business method" exception to patentability.

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activity based on analysis of network traffic data." It is possible that the claims in *SRI* would not pass muster under the "machine-or-transformation" test announced by the same court the following year.

[48] *A Patent System for the 21st Century* 1 (Steven A. Merrill et al., eds., 2004).

[49] 149 F.3d 1368 (Fed. Cir. 1998).

The NAS report confirms the point we have made above. Broad interpretation of patentable subject matter since 1980, for example, this Court's decisions in *Chakrabarty* (1980) and *Diehr* (1981), has been a positive force.[50] The NAS report supports the position that "patentable subject matter" should be a coarse filter and that the system can be improved merely by rigorous application of the the other criteria for patentability.

Similarly, the Federal Trade Commission conducted thorough hearings and recommended areas of improvement in the patent system to promote competition. One of the speakers, then Patent Office Director Rogan, discussed the history of innovation in the U.S. as spurred by the world's leading patent system.

> Another development has been the expansion of the subject matter of patents. Whenever new technologies are prepared for patenting, such as with microorganisms or computer software, the entry of patent law in these areas was greeted with predictions of disaster. Yet today, the United States is the international leader in these and all other areas of technological advancement.[51]

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[50] *Id.*

[51] Federal Trade Commission, *In the Public Hearing on: Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy*, 25 (2002), *available at* http://www.ftc.gov/opp/intellect/020206ftc.pdf.

Harvard economists Lerner and Jaffe published *Innovation and its Discontents: How our Broken Patent System is Endangering Innovation and Progress, and What To Do About It.*[52] They were very critical of several aspects of the U.S. patent system. However, with respect to patentable subject matter, this is what they had to say:

> There is no fundamental reason why an entrepreneur who does come up with a novel and non-obvious method of doing business needs patent protection less than an entrepreneur trying to make a go of comfortable high-heeled shoes or a new way of using radio spectrum for cell phones.[53]

B. The Scope Of Patentable Subject Matter Is Not Part Of The Current Debate On "Patent Reform"

More than ten years ago, the CAFC held that there was no "business method" exception to patentable subject matter and applied a "useful, concrete, and tangible result"[54] test to determine if a practical application existed for an abstract idea.[55] Since *Chakrabarty*, *Diehr* and *State Street Bank*, there have been numerous opportunities for Congress, under the banner of "Patent Reform," to take up and amend the standard for patentable subject matter. They easily could have established a "machine-or-transformation" test for method claims. They did not.[56]

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[52] Adam B. Jaffe & Joshua Lerner, *Innovation and Its Discontents: How Our Broken Patent System is Endangering Innovation and Progress, and What To Do About It* (2004).

[53] *Id.* at 200.

[54] The phrase "useful, concrete, and tangible" as it relates to patent eligibility appears first in *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994).

One of the battles in Congress to amend the Patent Act was waged shortly after the *State Street Bank* case was decided. The issue was whether the United States should have a "prior user right." The proponents wanted a broad prior user right, applicable to a wide variety of manufacturing processes. The opponents wanted no prior user rights. The compromise is found in 35 U.S.C. § 273. Part (b)(1) of this section provides for a prior user right for commercially used methods. The caveat is found in 35 U.S.C. § 273(a)(3): "For the purposes of this section . . . the term 'method' means a method of doing or conducting business."[57]

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[55] *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998).

[56] *See also A Patent System for the 21st Century* 84 (Steven A. Merrill et al., eds., 2004) ("Apart from the very recent congressional ban on human organism patents, clearly a special case, there have been no successful legislative attempts to circumscribe patenting.").

[57] These amendments were made to the statute in 1999. *State Street Bank* was decided in 1998.

Congress was therefore aware that methods of doing or conducting business were being patented. They had the opportunity during the passage of that bill to amend 35 U.S.C. § 101 to eliminate "business methods" from the scope of patentable subject matter. They chose not to do so. Rather, they provided that prior user rights were only applicable to "a method of doing or conducting business." This is a clear statement by Congress that they consider "business methods" to be within the scope of patentable subject matter.

Over the intervening years, there have clearly been other opportunities for Congress to establish a "machine-or-transformation" test to limit the possible scope of method claims. Pertinent to this issue, a bill was introduced in the last Congress which included a provision to make methods for avoiding taxes not subject to the damages provision of Sections 281, 283, 284 and 285.[58] Two things are significant about this proposal. First, the proposal defined "tax planning method" as follows:

> [T]he term "tax planning method" means a plan, strategy, technique, or structure that is designed to reduce, minimize, or defer, or has, when implemented, the effect of reducing, minimizing or deferring, a taxpayer's tax liability, but does not include the

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[58] H.R. 2365, 110th Cong. (2007).

> use of tax preparation software or other tools used solely to perform or model mathematical calculations or prepare tax or information returns.[59]

By attempting to limit damages on plans, strategies and techniques, the drafters of this proposal clearly acknowledged that these tax planning methods fell within the scope of patentable subject matter. There was no attempt to redefine patentable methods. Adopting a "machine-or-transformation" test would have excluded tax plans strategies and techniques. Instead, the perceived problem was approached from a limitation of damages perspective. Second, even the narrow restriction on damages for tax planning methods did not pass into law. Clearly, Congress is aware that "business method" patents are being granted and enforced and has chosen not to take any action to redefine methods.

In the current Congress, two bills are pending. House Bill 1260 has been introduced in the House and a similar bill, Senate Bill 515 has been reported out by the Senate Judiciary Committee. Roughly speaking, there are about 25 features of the bills that are being debated.[60] Significantly, none of the

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[59] *Id.* (Proposed amendment to Section 287 adding new provision (d)(2)).

[60] The proposed changes to 35 U.S.C. are extensive. Proposals relate to first to file, search and examination duties, assignee filing, willful infringement, prior user rights, "virtual" marking, post grant review, inter partes reexamination, best

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proposals relate to redefining any aspect of what constitutes patentable subject matter under 35 U.S.C. § 101. Of particular interest, neither of the current bills contain the limitation of damages on "methods of tax planning" found in the failed patent bill from the last Congress. As Circuit Judge Newman pointed out in her dissent to the decision below, "Where, as here, Congress has not acted to modify the statute in the many years since *Diehr* and the decisions of this court, the force of stare decisis is even stronger."[61]

II. The Supreme Court Should Adopt The "Useful, Concrete, And Tangible Result" Test For Patentability Of Method Claims

1. The Long-Standing Use Of The "Useful, Concrete, And Tangible Result" Test Is Well Established For Process Patents

The "useful, concrete, and tangible result" test first appeared in *In re Alappat*,[62] which stemmed from

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mode requirements, prior art submissions, venue for patent infringement actions, interlocutory appeals, fee setting authority, venue for certain appeals from the USPTO, ending of fee diversion, residency requirements for CAFC judges, establishing a micro-entity status, royalty income distributions under Bayh-Dole, USPTO telework program, district court patent pilot program, inequitable conduct, applicant quality submissions and 18-month publication for all applications.

[61] *Bilski*, 554 F.3d at 993 (Newman, J., dissenting).

[62] 33 F.3d 1526, 1544 (1994).

the interpretation of *Diehr* that an invention is not "abstract" as long as the invention has "practical application to a useful end."[63] Shortly after *Alappat*, the CAFC officially adopted the "useful, concrete, and tangible result" test in *State Street Bank* and found that a final share price is a useful, concrete, and tangible result.

Over the past ten years, patent owners and patent applicants have followed the CAFC's guidance in *Alappat* and *State Street Bank* that a process that produces a "useful, concrete and tangible result" is patent eligible, a standard also embraced by Congress in its update of the Patent Act in 1999 noted above.[64] The Board of Patent Appeals and Interferences (BPAI) also has consistently applied the "useful, concrete, and tangible result" test in many of its appeal cases involving process inventions.[65] For example, in 2006, the BPAI in *Ex parte Nuijten*[66] rejected a patent application seeking to patent a signal with embedded data on the ground that "the signal . . . has no concrete tangible physical structure." The BPAI's decision in *Ex parte Nuijten* also was affirmed by the CAFC, in which the Court held that a signal is not a "tangible" article under the meaning of "manufacture" as defined in 35 U.S.C. § 101.[67]

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[63] *Id.* at 1552.

[64] When Section 273 of the Patent Act was enacted in 1999, Congress embraced this flexible approach, describing the "useful, concrete, and tangible result" test as the "essential question" of patent eligibility. H.R. Rep. No. 106-464, at 122 (1999) (Conf. Rep.).

[65] *See, e.g.*, *Ex parte Watanabe*, Appeal 2007-1251 (B.P.A.I. Aug. 3, 2007) ("[T]he result of claim 37 is a numerical representation of a quantity of a feature. However, a number is neither concrete nor tangible. Thus, claim 37 is an abstract idea that is nonstatutory under 35 U.S.C. § 101.").

[66] 84 U.S.P.Q.2d 1335, Appeal 2003-0853 (B.P.A.I. Jan. 24, 2006).

2. Patent Examiners Are Well Acquainted And Trained In Adopting The "Useful, Concrete, And Tangible Result" Test

The USPTO also has issued interim examination guidelines and memorandums that are consistent with the decisions of this Court and the CAFC. These guidelines and memoranda assist patent examiners in identifying judicial exceptions to statutory subject matter (i.e., abstract idea, law of nature and natural phenomenon) and resolving issues pertaining to process inventions. In 1996 and again in 2005 after the *State Street Bank* decision, the USPTO published training materials to bring the Computer Guidelines and their application in line with *State Street Bank*.[68]

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[67] *In re Nuijten*, 500 F.3d 1346, 1356 (Fed. Cir. 2007).

[68] U.S. Patent & Trademark Office, Examination Guidelines For Computer-Related Inventions Training Materials Directed to Business, Artificial Intelligence, and Mathematical Processing Applications (2005), *available at* http://www.uspto.gov/web/offices/pac/compexam/examcomp.pdf; Examination Guidelines for Computer Related Inventions, 61 Fed. Reg. 7478 (U.S. Patent & Trademark Office Feb. 28, 1996).

The training materials outlined patent examining procedures for evaluating patent eligible subject matter, particularly in the area of business, artificial intelligence and mathematical processes, to provide enhanced technical training for the examiners. Since the inception of the "useful, concrete, and tangible result" test, patent examiners are instructed to determine what it is that a patent applicant has invented and is seeking to patent. Patent examiners are obliged to review the entire application to determine whether the invention as a whole would produce a "useful, concrete, and tangible result."[69]

To harmonize the patent examining system with the latest legal precedents, the USPTO has adopted in 2005, as Interim Guidelines,[70] the "useful, concrete, and tangible result" test as one of two principal ways to determine whether an invention includes an appropriate application of a § 101 judicial exception in an effort to follow the guidance in *State Street*

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[69] U.S. Patent & Trademark Office, Manual of Patent Examining Procedure § 2106 II (8th ed., rev. 6, 2007) (citing *In re Alappat*, 33 F.3d at 1544) [hereinafter MPEP].

[70] U.S. Patent & Trademark Office, Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility (2005), *available at* http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/guidelines101_20051026.pdf [hereinafter "Interim Guidelines"]. The substantive portion of the Interim Guidelines has since been incorporated into Chapter 2100 of the Manual of Patent Examining Procedure. *See* MPEP, *supra* note 69, § 2106 II. The MPEP is the comprehensive guide patent examiners use throughout the prosecution of a patent application.

Bank.[71] To that end, the Interim Guidelines instruct the patent examiners to proceed with traditional patent prosecution inquiries, beginning with the determination of the inventor's perceived utility of, or practical application for, the invention.[72] The Interim Guidelines provide guidance to the patent examiners by giving a brief overview of the relevant case law, including precedent from the Supreme Court, Court of Customs and Patent Appeals, and CAFC to insure that the examiners are aware of the traditional breadth of eligible subject matter and the framework of the judicial exceptions.[73] Including legal precedents in the Interim Guidelines insures that the patent examiners are acquainted with the traditional breadth of eligible subject matter and the framework of the judicial exceptions.[74]

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[71] *AT&T Corp. v. Excel Communications Inc.*, 172 F.3d 1352 (Fed. Cir. 1999); Interim Guidelines, *supra* note 70, at 19. The other principal way required patent examiners to decide whether "[t]he claimed invention 'transforms' an article or physical object to a different state or thing."

[72] *Id.* at 3-4.

[73] Interim Guidelines, *supra* note 70, at 11-14 (citing *Diamond v. Chakrabarty*, 447 U.S. 303 (1980); *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127 (1948); *Gottschalk v. Benson*, 409 U.S. 63 (1972); *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994)). The Interim Guidelines cite the Federal Circuit's decision in *State Street Bank & Trust Co. v. Signature Financial Group Inc.*, 149 F.3d 1368 (1998) in different sections. *Id.* at 1, 4, 15. Additionally, Annex II of the Interim Guidelines provides a more thorough exposition on the relevant case law interpreting eligible subject matter. *Id.* at 32-41.

The Interim Guidelines also explicitly set forth the meaning and application of the "useful, concrete, and tangible result" test. Using *State Street Bank* and *AT&T* as supporting frameworks, the Interim Guidelines craft a series of factors for the examiners to consider in determining whether a claim provides a practical application that produces a useful, concrete and tangible result.[75] In support of the Interim Guidelines, the Manual of Patent Examining Procedure ("MPEP") also provides definitions for "substantial utility" and "credible utility" that encompass the definitions of "concrete" and "tangible" presented in the Interim Guidelines.[76] In particular, "substantial utility" requires that the invention have a "real-world" use (i.e., the invention is not abstract),[77] and "credible utility" addresses the requirement in the Interim Guidelines that the invention be repeatable.[78]

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[74] Charles A. Damschen, *Patentable Subject Matter: Do The 2005 USPTO Interim Guidelines Intersect State Street At A Roundabout?*, 93 U. Miami Inter-Am. L. Rev. 1889, 1908 (2008).

[75] Interim Guidelines, *supra* note 70, at 20-21.

[76] MPEP, *supra* note 69, § 2107.01.

[77] Interim Guidelines, *supra* note 70, at 4.

[78] *Id.*

3. USPTO Allowance Rate Of Business Method And Process Patents Show The "Useful, Concrete, And Tangible Result" Test Is Well Suited For Examining Business Processes And Methods Patents

Patent examiners are well trained to tackle subject matter eligibility issues related to process inventions including business processes. The USPTO internal guidelines and memorandums have provided great resources through which the patent examiners are educated in this complex arena. These effects also are suggested from the USPTO filing and issuance statistics for business process applications. After *State Street Bank* and *AT&T*,[79] the USPTO has devoted significant resources to the examination of these applications including instituting extra patent searches and management reviews, and hiring additional patent examiners with background in finance, tax and insurance.[80] As a result of these organizational changes for examining business process applications, the allowance rate for business process applications has decreased from above 50% before 2000 to 44% in 2002, 16% in 2003, 11% in 2004, 11% in 2005, and remained steady at 19% in

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[79] 172 F.3d 1352 (Fed. Cir. 1999).

[80] Interim Guidelines, *supra* note 70, at 4; John Love, Steps Taken To Improve Patent Quality (2002), *available at* http://www.ftc.gov/opp/intellect/020227johnlove.pdf.

2006, 20% in 2007, and 17% in 2008.[81] These allowance rates are significantly lower than for other applications and the overall average allowance rate for all applications, which for 30 of the last 34 years has been higher than 60%.[82] These data confirm that the "useful, concrete, and tangible result" test can be properly applied by the USPTO to improve quality of the issued business process patents while flagging those that are simply not novel, obvious or do not meet utility or disclosure requirements. Accordingly, should the settled expectations of patent owners and the inventing public be abruptly disturbed, it would take enormous resources to restore the current rule-oriented, workable patent examining framework for determining the patentability of process inventions.

Finally, our position is consistent with Circuit Judge Newman's observation that the "useful, concrete and tangible result" test has been a workable test to exclude abstract ideas:

> The now-discarded criterion of a "useful, concrete, and tangible result" has proved to be of ready and comprehensible applicability

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[81] Wynn W. Coggins, *Update on Business Methods for the Business Methods Partnership Meeting* (2007), *available at* www.uspto.gov/web/menu/pbmethod/partnership.pps.

[82] James A. Toupin, *Practitioner Responsibilities: Should We Rethink Whether The Duty Of Reasonable Inquiry Requires Prior Art Searches?*, IPO 2008 Annual Meeting, September 21-23, 2008 (2008), *available at* http://www.bustpatents.com/toupin.pdf.

> in a large variety of processes of the information and digital ages. The court in *State Street Bank* reinforced the thesis that there is no reason, in statute or policy, to exclude computer-implemented and information-based inventions from access to patentability. The holdings and reasoning of *Alappat* and *State Street Bank* guided the inventions of the electronic age into the patent system, while remaining faithful to the *Diehr* distinction between abstract ideas such as mathematical formulae and their application in a particular process for a specified purpose. And patentability has always required compliance with all of the requirements of the statute, including novelty, non-obviousness, utility, and the provisions of Section 112.[83]

FPLC expressly declines to take any position regarding whether the Petitioners' claims meet the "useful, concrete and tangible result" test.

◆

CONCLUSION

The "machine-or-transformation" test is contrary to this Court's precedent and Congressional intent in enacting and preserving 35 U.S.C. § 101. Furthermore, entire industries have grown out of an expansive approach to patentability. The "useful, concrete and tangible result" test is the correct test for patentability as it is a workable standard that does not allow for the patenting of laws of nature, natural phenomena nor abstract ideas. As this test is broad, it is well suited for a future of innovation in whatever form.

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[83] *In re Bilski*, 545 F.3d 943, 991-92 (Fed. Cir. 2008) (en banc) (Newman, J., dissenting).

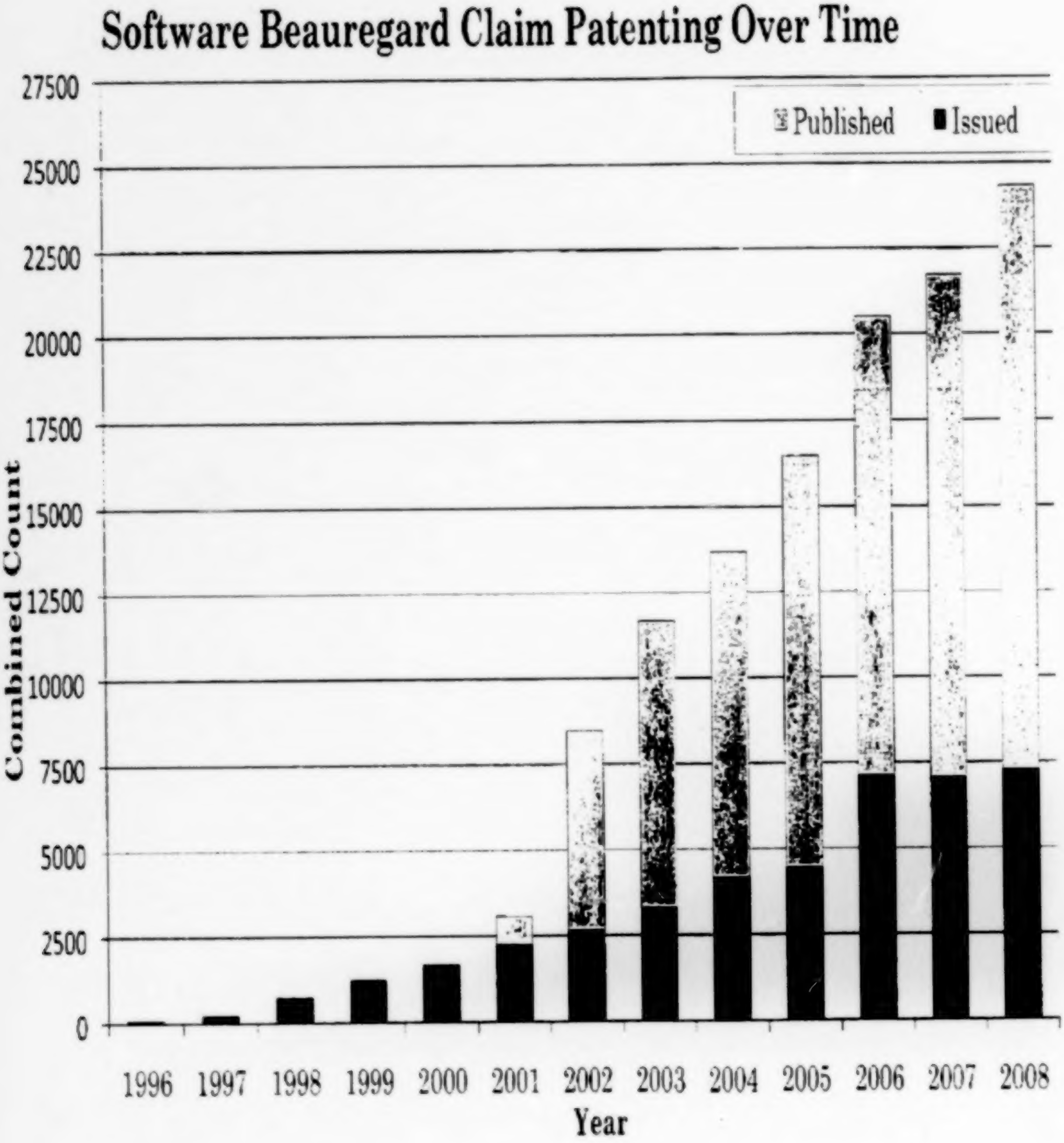
Respectfully submitted,

Of Counsel:
J. JEFFREY HAWLEY
Director Amicus Brief Clinic
Professor of Law
THOMAS G. FIELD, JR.
Professor of Law
FRANKLIN PIERCE
LAW CENTER
2 White Street
Concord, NH 03301
(603) 228-1541
Amicus Curiae

ANN M. MCCRACKIN
Counsel of Record
Director Patent
Prosecution Program
Professor of Law
FRANKLIN PIERCE
LAW CENTER
2 White Street
Concord, NH 03301
(603) 513-5239

APPENDIX 1

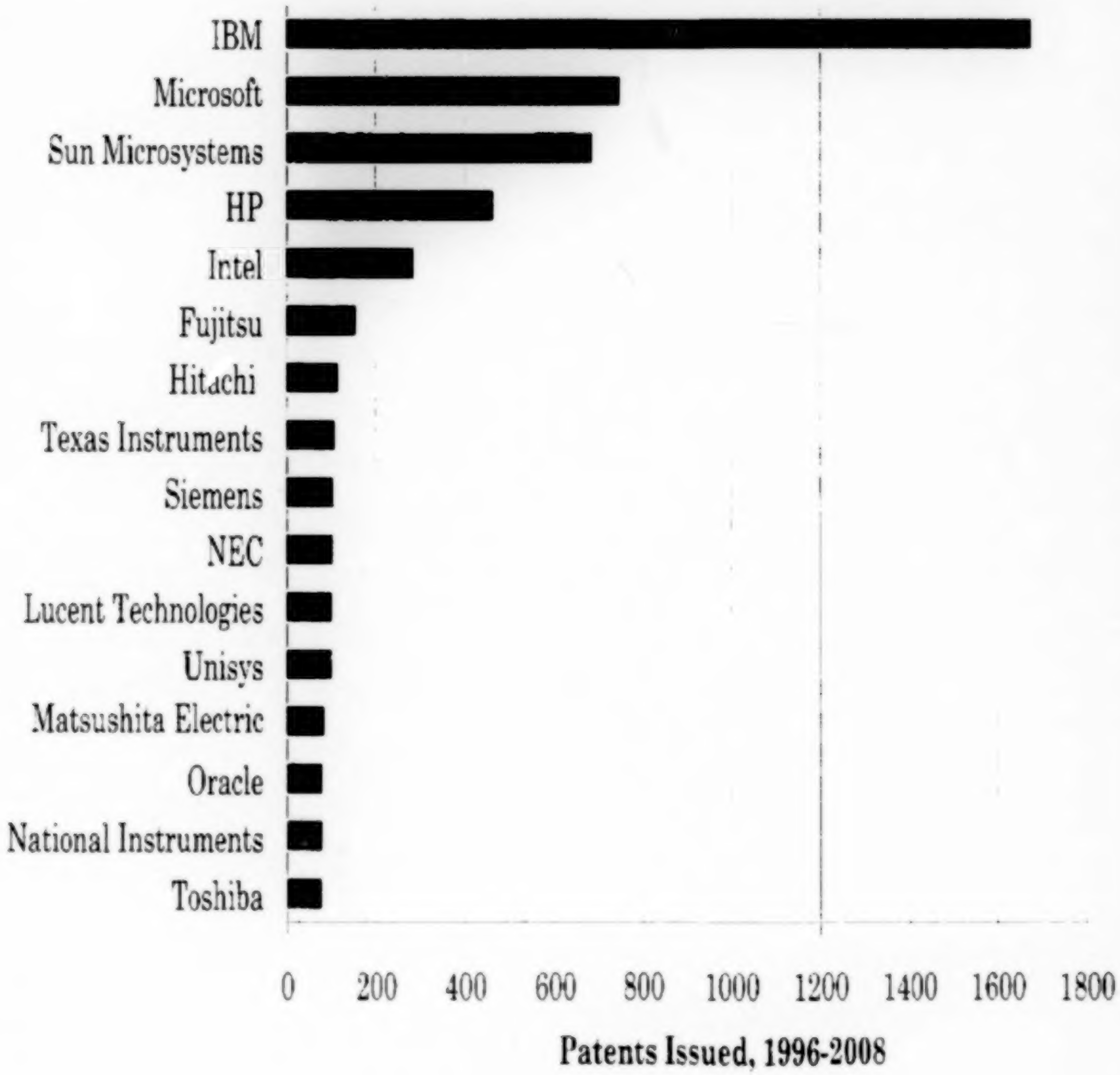
App. 1



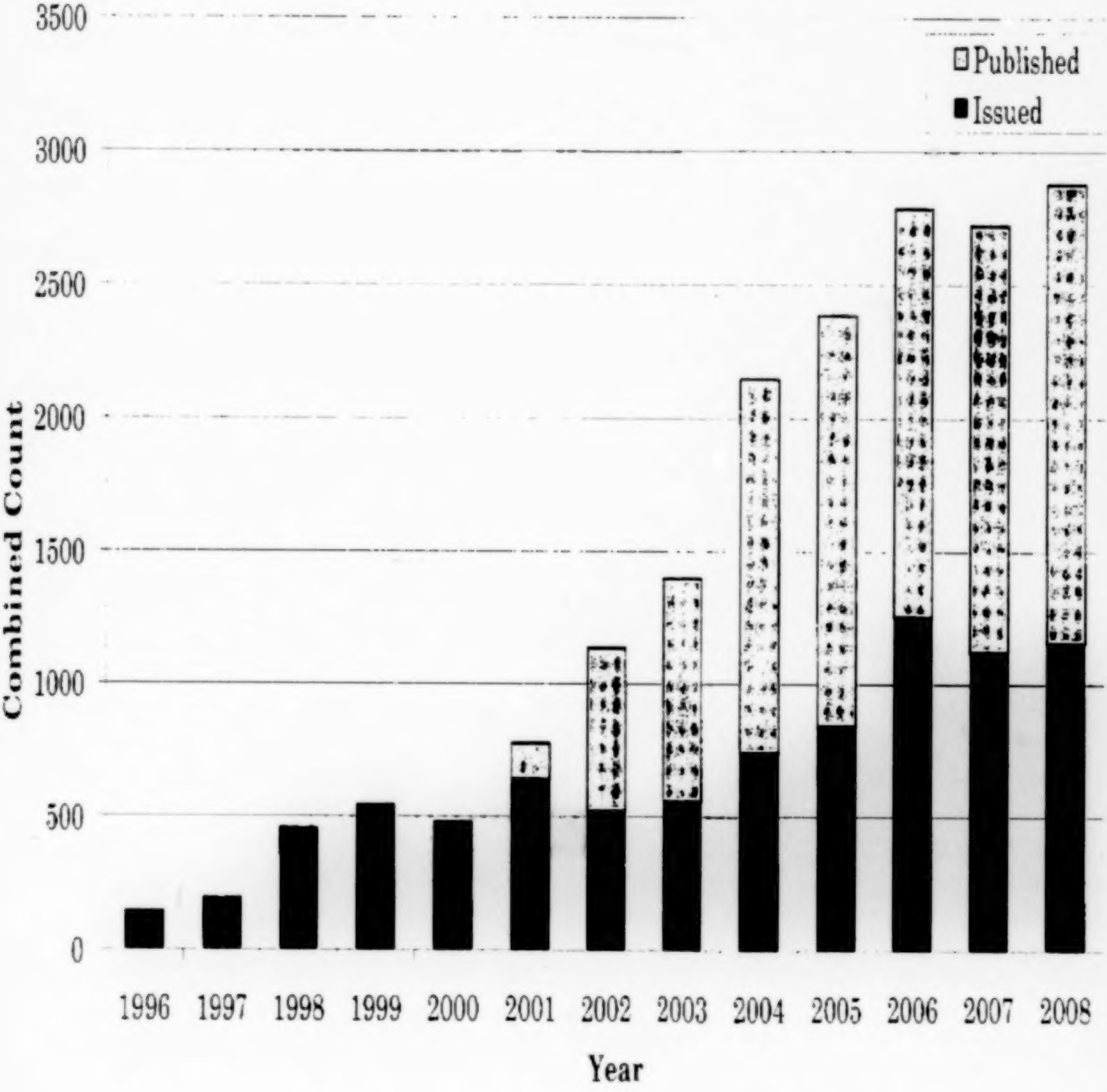
Software Beauregard Claim Patenting Over Time

App. 2

Top 15 Assignees in Software Class 717



Software Patenting Over Time in Class 717



APPENDIX 2

The claims in a patent describe the metes and bounds of an invention. All claims have three principal components: a preamble, a transitional phrase, and a body.

The preamble is generally a short introductory phrase to frame the context of the claim. The purpose of the preamble is to "indicate the statutory class of the claim (often by implication from the words in the preamble) and to name or define the thing that is to be claimed."[84] Most patent applications contain more than one claim. If some of the claims are directed to different statutory classes of invention, the preambles of the claims to each statutory class will be different.[85]

The transitional phrase separates the preamble from the body of the claim. The term "comprising" is the most frequently used transitional phrase. The body of the claim includes the limitations of the invention.

All claims have a preamble, a transition phrase and a body regardless of the type of claim. Some basic types of claims include method claims, apparatus claims and article of manufacture claims each of which correspond to a different statutory category in 35 U.S.C. § 101

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[84] Robert C. Faber, *Landis on Mechanics of Patent Claim Drafting* § 2.4 (5th ed., release 7, 2008)

[85] Jeffery G. Sheldon, *How to Write a Patent Application* § 6.3.3 (Release 24, 2009)

Method claims are used to define an invention as one or more acts. Method claims define the invention in terms of what the invention does or how it is done, as opposed to what the invention is structurally. Using method claims allows the applicant to divorce the function of the invention from the structure of the invention within a given claim. A method claim can be identified by the presence of the term "method" or "process" in the preamble of the claim. The terms "method" and "process" are used interchangeably in this type of claim. A method claim is infringed when the acts of the method are performed.

Apparatus claims are used to define an inventive device or system that usually has active components. An apparatus claim defines the invention in terms of the components of the invention, that is, in terms of what the invention *is* as opposed to what the invention *does*. The Patent Statute also permits an apparatus claim to be defined with means-plus-function elements.[86] An apparatus claim can be identified by the terms in the preamble. Although apparatus claims have more variation in the terminology used in the preamble than method claims, the preamble of an apparatus claim frequently includes one of the following terms "apparatus," "device," or "system." "Systems" can be thought of as dispersed machine components that interact with each other. For example, a system might include a "transmitter" in one location and a "receiver" in another. An apparatus claim is different than a method claim because an apparatus claim generally describes the components of the device or system in terms of physical or structural characteristics. An apparatus claim is infringed by the actual device or system.

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[86] As stated in 35 U.S.C. § 112, paragraph 6, "[a]n element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereon, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof."

An article claim includes claims drawn to an inventive device with no active components. Such claims are not legally distinct from apparatus claims. Article claims can sometimes be used to cover products of electronic or software inventions. Following *In re Beauregard,*[87] article claims have been written for computer-readable mediums such as computer disks containing novel computer programs. Computer-readable medium claims, also called Beauregard claims, provide a mechanism to claim inventive software products. This type of claim is important when it is desirable to be able to identify those making or selling a disk or other medium as direct infringers. A typical computer readable medium claim will have a preamble such as "[a] computer-readable medium having computer executable instructions for performing a method comprising. . . ." The claim elements following the transitional phrase in the body of the claim may appear similar to the elements of a method claim; however, a computer readable medium claim is different than a method claim. A computer readable medium claim describes a product and is infringed by the product, not by performing the method.

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[87] 53 F. 3d 1583 (Fed. Cir. 1995).

The Patent Statute sets out the requirements for a patent application, which include providing a description of the invention and one or more claims.[88] The description of the invention is often referred to as the specification. One purpose of the specification is to describe the invention in such "full, clear, concise and exact terms as to enable any person skilled in the art . . . to make and use the [invention]."[89] The specification may also describe the general subject matter of the invention or the environment in which the invention is practiced.

The specification concludes with one or more claims that define the invention.[90] The purpose of the claims is to define the metes and bounds of the invention. In other words, the exclusive right provided by a patent is determined by the claims.

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[88] 35 U.S.C. § 112, ¶¶ 1 and 2.

[89] 35 U.S.C. § 112, ¶ 1.

[90] 35 U.S.C. § 112, ¶ 2.

APPENDIX 3

Markman Westview Instruments, Inc., 517 U.S. 370 (1996).

Reissue No. 33054: Inventory Control and Reporting System for Drycleaning Stores

1. The inventory control and reporting system, comprising;

a data input device for manual operation by an attendant, the input device having switch means operable to encode information relating to sequential transactions, each of the transactions having articles associated therewith, said information including transaction identity and descriptions of each of said articles associated with the transactions;

a data processor including memory operable to record said information and means to maintain an inventory total, said data processor having means to associate sequential transactions with unique sequential indicia and to generate at least one report of said total and said transactions, the unique sequential indicia and the descriptions of articles in the sequential transactions being reconcilable against one another;

a dot matrix printer operable under control of the data processor to generate a written record of the indicia associated with sequential transactions, the written record including optically-detectable bar codes having a series of contrasting spaced bands, the bar codes being printed only in coincidence with each said transaction and at least part of the written record bearing a portion to be attached to said articles; and,

at least one optical scanner connected to the data processor and operable to detect said bar codes on all articles passing a predetermined station, whereby said system can detect and localize spurious additions to inventory as well as spurious deletions therefrom.

Microsoft Corp. v. AT & T Corp., 550 U.S. 437 (2007). Reissue 32580: Digital Speech Coder

2. A method for processing a speech pattern comprising the steps of:

partitioning the speech pattern into successive time intervals;

generating a set of signals representative of said speech pattern of each time interval responsive to said interval speech pattern;

generating a signal representative of the differences between said interval speech pattern and the interval speech pattern representative signal set responsive to said interval speech pattern and said interval speech pattern representative signals;

forming a first signal corresponding to the interval speech pattern responsive to said interval speech pattern representative signals and the interval differences representative signal;

forming a second interval corresponding signal responsive to the interval speech pattern representative signals;

generating a signal corresponding to the differences between said first and second interval corresponding signals; and

producing a third signal responsive to said interval differences corresponding signal for altering said second signal to reduce the interval differences corresponding signal.

eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388 (2006).

U.S. Patent No. 5,845,265

1. A system for presenting a data record of a good for sale to a market for goods, said market for goods having an interface to a wide area communication network for presenting and offering goods for sale to a purchaser, a payment clearing means for processing a purchase request from said purchaser, a database means for storing and tracking said data record of said good for sale, a communications means for communicating with said system to accept said data record of said good and a payment means for transferring funds to a user of said system, said system comprising:

a digital image means for creating a digital image of a good for sale;

a user interface for receiving textual information from a user;

a bar code scanner;

a bar code printer;

a storage device;

a communications means for communicating with the market; and

a computer locally connected to said digital image means, said user interface, said bar code scanner, said bar code printer, said storage device and said communications means, said computer adapted to receive said digital image of said good for sale from said digital image means, generate a data record of said good for sale, incorporate said digital image of said good for sale into said data record, receive a textual description of said good for sale from said user interface, store said data record on said storage device, transfer said data record to the market for goods via said communications means and receive a tracking number for said good for sale from the market for goods via said communications means, store said tracking number from the market for goods in said data record on said storage device and printing a bar code from said tracking number on said bar code printer.

Quanta Computer, Inc. v. LG Electronics, Inc., 128 S.Ct. 2109 (2008).

U.S. Patent No. 5,379,379

7. In an information processing system . . . , a method of reading and writing the information units comprising the steps of:

buffering write requests, including write addresses, as they are received from the system bus;

buffering read requests, including read addresses, as they are received from the system bus; comparing when received each read address against buffered write addresses, if any, to determine if a received read address has an address value within a predetermined range of address values of a buffered write address;

if a received address is determined not to be

within the predetermined range of addresses of any buffered write addresses then:

first executing in sequence all buffered read requests; and

then executing in sequence all buffered write requests;

else if a received address is determined to have an address value within the predetermined range of address values of any buffered write address:

first executing in sequence all buffered read requests up to but not including the received read request which was determined to be within the predetermined range;

then executing all buffered write requests; and

then executing the buffered read request which was determined to be within the predetermined range.

AMICUS
CURIAE
BRIEF

72

No. 08-964

Supreme Court, U.S.
FILED
OCT 2 - 2009
OFFICE OF THE CLERK

IN THE

Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

DAVID J. KAPPOS, UNDER SECRETARY OF
COMMERCE FOR INTELLECTUAL PROPERTY AND
DIRECTOR OF THE UNITED STATES PATENT
AND TRADEMARK OFFICE,
Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF FOR FREE SOFTWARE FOUNDATION AS *AMICUS CURIAE* IN SUPPORT OF RESPONDENT

Jerry Cohen, Esq.
Counsel of Record
Burns & Levinson LLP
125 Summer Street
Boston, Massachusetts 02110
(617) 345-3000

Attorney for Amicus Curiae
Free Software Foundation

BATEMAN & SLADE, INC. BOSTON, MASSACHUSETTS

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INTEREST OF *AMICUS CURIAE*[1]

The Free Software Foundation ("Foundation"), founded in October 1985, pioneered a movement of information exchange that initially had significant impact on software development practices, but later also inspired changes in broader fields of great public benefit. In addition to having been a major developer in the field of software, it provides via its legal, technical, and administrative infrastructure an umbrella for further software development by other programmers around the world. As an important part of this worldwide free software movement, the Foundation has been both an inspiration for, and a close observer of, related social movements and organizations promoting legal sharing of innovative knowledge and cultural works in a variety of fields. The Foundation's mission is focused on free software,[2] which gives all users the freedoms to study, copy, modify, and redistribute their own changed versions.

The Foundation supports free software development directly in three main ways. First, through its GNU Project, launched in 1983 by the Foundation's creator to provide a fully free and functional operating system, it has provided necessary services like project hosting, development servers, network bandwidth, legal support, and funding for programmers. Second, it provides a set of copyright licenses which can be used by any author as the terms under which to distribute his or her own software and documentation. Rather than forbid users from modifying and redistributing the software, these public copyright licenses encourage sharing and modification, providing a way for authors to commit their work to a commons and users to share and improve those works without fear. The Foundation's primary license is the GNU General Public License (GNU GPL). In addition to its own licenses, the FSF keeps an up-to-date list of licenses published by other companies and organizations which meet the Free Software Definition.[3] Third, it engages in public education and advocacy work to raise awareness about free software to create more opportunities for its use and development, and to ensure that the freedoms outlined in the Free Software Definition are respected.

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[1] Pursuant to Supreme Court Rule 37, no counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than the *amicus curiae*, its members, or its counsel made a monetary contribution to its preparation or submission. Counsel of record for all parties have filed with the Court letters of consent to the filing of briefs by *amici curiae*.

[2] See the Foundation's Free Software Definition, *available at* http://www.gnu.org/philosophy/free-sw.html.

Over the last 26 years, the GNU Project has successfully developed the utilities and applications that, together with the kernel Linux (also distributed under the GNU GPL) written by Linus Torvalds and contributors around the globe, form a complete free software operating system used by a growing number of individuals, governments, and companies in place of Microsoft's Windows or Apple's OS X. This operating system, though often erroneously referred to simply by the name of its kernel Linux, is called GNU/Linux. Though the

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[3] See the Foundation's Various Licenses And Comments About Them, *available at* http://www.gnu.org/philosophy/license-list.html.

GNU/Linux operating system is now fully functional, the GNU Project remains active, continuing to refine its software and develop new applications.

One of the GNU Project's most fundamental tools is the GNU Compiler Collection (GCC), which has become the standard for programmers working on Unix-like systems around the world.[4] GCC is used heavily in both the private and public sectors. In 1992 the US Air Force awarded New York University (NYU) a contract to build a compiler for the Ada programming language, which is used extensively in systems deployed by the Department of Defense. The contract specified that the compiler was to be released under the GNU GPL, and the copyrights assigned to the Free Software Foundation.[5] This compiler, GNAT, is an extension of the GNU Compiler Collection (GCC), and is commonly used to compile avionic systems, including the Lockheed Boeing 787 Dreamliner, C130 Hercules aircraft and Raytheon Ship Self-Defense System (SSDS).

Though itself a nonprofit, the Foundation's publicly available licenses are known worldwide and have been adopted (as proposed or with variations) and implemented by hundreds of thousands of people outside the GNU Project who are also creating, adopting and modifying software for both commercial and noncommercial purposes. The Foundation's software licenses are used by 65% of the more than 200,000 coding projects listed by Black Duck.[6] The aggregate effect of their work, done with reliance on a model of freedom, has promoted science and the useful arts, the objects of copyright and patent systems set forth in U.S. CONST. art. 1, § 8, cl. 8; has limited monopoly and restraint of trade, such limitation being an important object of federal and state statutes and common law; and has promoted freedom of expression, an object of federal and state constitutions. The extent of Foundation President Richard Stallman's contribution to free software and its social movement has been recognized by many institutions, including a Fellowship awarded to him by the MacArthur Foundation in 1990.[7]

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[4] See Vinod Valloppillil, *Open Source Software, a (New?) Development Strategy*, Aug. 11, 1998 (hereinafter "VALLOPPILLIL"), *available at* http://iowa.gotthefacts.org/ 011607/6000/ PX06501.pdf ("GCC is the most widely used compiler in academia & the OSS world. In addition to the compiler a fairly standardized set of intermediate libraries are available as a superset to the ANSI C libraries.").

[5] For further information about this arrangement, see generally http://www.adacore.com/home/company/customers/ featured-projects/ & http://cs.nyu.edu/cs/review95/schonberg.ps.

The impact of the free software movement extends far beyond people who directly identify themselves as its members; it has influenced many other software and non-software social movements. In 1998, a group of people calling themselves "open source" split off from the movement in disagreement, in order to avoid discussion of the ethical and the social ramifications of free software in favor of values that would appeal directly to businesses, i.e., efficiency, security and cost-savings. While the Foundation is firmly opposed to the active refusal of open source to focus on computer user freedom, the two groups often collaborate on the actual writing of software code, and because open source proponents still use free software copyright licenses, it is common to talk about them together as Free, Libre and Open Source Software, or FLOSS, for short.

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[6] See http://www.blackducksoftware.com/oss/licenses/#adoption.

[7] See http://www.macfound.org/site/c.lkLXJ8MQKrH/b.1142703/k.787E/Fellows_List__August_1990.htm).

Bruce Perens, co-founder of the Open Source Initiative, has explained the connection between Richard Stallman and the Foundation's notion of free software, and open source: "My intent has always been for Open Source to simply be another way of talking about Free Software, tailored to the ears of business people, and that it would eventually lead them to a greater appreciation of Richard Stallman's arguments."[8] FLOSS writings, distributed under the terms of the GNU GPL and inspired in substantial part by the Foundation's work, have become staples of data handling and other information systems, telecommunications, video and sound files creation and control, scientific research, bioinformatics, health care, enterprise management and – of equal importance – have been useful in the study of artificial intelligence as a science apart from industrial applications. Although it does not achieve the public visibility or recognition of proprietary software systems like those developed by Microsoft and Apple, a closer look shows that many, if not most, uses of computers today in both the public and private sectors involve FLOSS.

Free software, specifically software distributed under the GNU GPL, is also used heavily by the government of the United States. A 2003 report commissioned by the Department of Defense ("DOD"), entitled "Use of Free and Open Source Software (FOSS) in the U.S. Department of Defense" ("DOD Report") credits Richard Stallman and the

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[8] See http://perens.com/works/articles/State8Feb2008/.

Free Software Foundation directly. The DOD Report shows that roughly 50% of all of the FLOSS used at the DOD is licensed under the GNU GPL, and evaluates what a possible world within the DOD without this software would look like, stating:

> The main conclusion of the analysis was that FOSS software plays a more critical role in the DoD than has generally been recognized. FOSS applications are most important in four broad areas: Infrastructure Support, Software Development, Security, and Research. One unexpected result was the degree to which Security depends on FOSS. Banning FOSS would remove certain types of infrastructure components (e.g., OpenBSD) that currently help support network security. It would also limit DoD access to--and overall expertise in--the use of powerful FOSS analysis and detection applications that hostile groups could use to help stage cyberattacks. Finally, it would remove the demonstrated ability of FOSS applications to be updated rapidly in response to new types of cyberattack. Taken together, these factors imply that banning FOSS would have immediate, broad, and strongly negative impacts on the ability of many sensitive and security-focused DoD groups to defend against cyberattacks.[9]

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[9] For a publicly available copy, see http://www.terry bollinger.com/index.html#dodfoss.

In addition, NASA has also recognized the importance of free software by creating its own repository of freely licensed works.[10] While the military and other divisions of government may not have to worry directly about their own use of patents, the DOD Report shows that their operation depends on the continued development worldwide of the kind of free software they use today – the kind of free software facilitated by the Foundation.

Software licensed under the GNU GPL is also critical to the private sector. A world without the Foundation and FLOSS in the private sector would look vastly different. Free software has even been incorporated "under the hood" into a number of consumer products. While these products impose unethical restrictions on users and do not respect free software values, they are nonetheless built using its software. Free software also is crucial to the business of many modern technology companies, including IBM and Novell. These companies may claim patents are necessary for their software businesses, but in many ways they actually rely on and profit from software produced by those with no interest in patents.

Even Microsoft's Bill Gates has criticized the impact of patents on software development. In a memorandum sent to Microsoft's upper management on May 16, 1991, Mr. Gates cited an article written by Richard Stallman for the League of Programming Freedom:

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[10] See Matt Asay, "*NASA takes open source into space*," CNET NEWS, July 22, 2009, *available at* http://news.cnet.com/8301-13505_3-10292950-16.html; see also Nasa Ames Open Source Software, http://opensource.arc.nasa. gov/.

Patents: If people had understood how patents would be granted when most of today's ideas were invented, and had taken out patents, the industry would be at a complete standstill today. I feel certain that some large company will patent some obvious thing related to interface, object orientation, algorithm, application extension or other crucial technique. If we assume this company has no need of any of our patents then they have a 17-year right to take as much of our profits as they want. The solution to this is patent exchanges with large companies and patenting as much as we can. Amazingly we haven't done any patent exchanges that I am aware of. Amazingly we haven't found a way to use our licensing position to avoid having our own customers cause patent problems for us. I know these aren't simple problems but they deserve more effort by both Legal and other groups. For example we need to do a patent exchange with HP as part of our new relationship. In many application categories straightforward thinking ahead allows you to come up with patentable ideas. A recent paper from the League for Programming Freedom (available from the Legal department) explains some problems with the way patents are applied to software.[11]

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[11] See http://antitrust.slated.org/www.iowaconsumercase.org/011607/0000/PX00738.pdf.

Specific free software programs aimed at individual computer users' desktops have also seen wide success recently. The Mozilla Firefox browser alone, available as free software under a number of licenses including the GNU GPL, has reached a market share of over 20% in a field that was once so dominated by Microsoft's Internet Explorer that the company was prosecuted over antitrust concerns.[12] In addition to the millions of users using free software browsers, much of the Internet they are connecting to itself is built on free software. Though it is sometimes deployed with proprietary extensions, the majority of Web sites are based on the free software Apache Web server.[13]

The Foundation has been in a unique position to contribute to and witness the development that has happened as a result of free software over the course of the last 26 years, but also to witness the development that did not and does not happen whenever the specter of patent infringement hangs over the heads of people with insufficient resources to defend against such threats. It has seen the effort undertaken by free software developers to defend themselves against software patents -- both as a preemptive measure to avoid legal disputes, and in response to specific threats from patent holders.

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[12] See Emil Protalinski, "*Safari, Chrome, Firefox steal share from IE, Opera in January*," ARS TECHNICA, Feb. 6, 2009, *available at* http://arstechnica.com/microsoft/news/2009/02/january-2009.ars; Aza Dotzler "*Firefox: 270 million*,", May 4, 2009, *available at* http://weblogs.mozillazine.org/asa/archives/ 2009/05/firefox_at_270.html.

[13] See Erez Reuveni, "*Authorship in the Age of the Conducer*," 54 J.COPYRIGHT SOC'Y U.S.A. 285, 293 (Jan. 2007) ("Today, roughly 70% of Web server software [*sic*] runs on Apache Web server, free software produced under the open-source model.").

In some cases, the free software community has simply done without certain software or functionality because of threats from patents. Fedora, a community distribution of GNU/Linux sponsored by Red Hat, cannot include software to play MP3s or unencrypted DVDs because of patent concerns.[14] For similar reasons, free software support for the various video codecs used by multimedia on the Web today remains hit-or-miss.

As part of its publication of a new version of the GNU GPL, the Foundation ran an international community comment process, soliciting feedback from companies and individuals about how the license needed to be improved. This process, which ran for over a year and accumulated over 2,500 comments,[15] showed that many free software developers were deterred by the threat of patents and sought protection. For much of its history, the Foundation has grappled with the very real possibility of patent suits against users of free software. Users of free software have been trapped by unforeseen patent claims and forced into costly settlements and cross-licensing agreements.[16] While the respective parties involved in these suits may have reached settlements, the larger questions for all users and developers of free software involving the threat of a patent suit are left unsettled.

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[14] See http://fedoraproject.org/wiki/ForbiddenItems.

[15] See http://www.fsf.org/news/gplv3_launched.

[16] See, e.g., Ina Fried, "*Microsoft, TomTom settle patent dispute*," CNET NEWS, Mar. 30, 2009, *available at* http://news.cnet.com/8301-13860_3-10206988-56.html.

The Foundation has been at the center of an emerging and now overwhelming new economic and cultural model of sharing creativity and a community adopting that model. The Foundation has distinct observations of its own, and of its larger community, to offer the Court as to the interaction of this activity with copyright and patent systems. As discussed below, the patent system has not met the constitutional purpose of advancing useful arts in the case of software creation, but rather has been an obstacle to advancement. The Foundation can attest to the fact that the size and shape of this obstacle cannot be understood merely by examining actual instances of patent litigation; the mere threat of such litigation against parties without the ability to cross-license or afford sufficient representation has a substantially documented[17] chilling effect on innovative free software development, and by extension, on other socially beneficial movements inspired by free software.

The Foundation also has published the GNU Free Documentation License (GNU FDL).[18] The Foundation originally created the GNU FDL to provide a basis for documentation for the GNU Project to be shared and adapted the same way that the GNU Project's software is. However, it can readily be applied to any written reference work, and other projects have used this license as the basis for sharing information and collaborating. Noteworthy among these is Wikipedia, an online encyclopedia which generally can be edited by anyone who visits its web site. Creators of Wikipedia have said that they were inspired by the Foundation's ideas.[19] Wikipedia used the GNU Free Documentation License exclusively as the license for all of its articles until June 2009,[20] and at that time it covered more than 340,000 texts.[21] The vast majority of articles on Wikipedia today are now dual-licensed, with the GNU FDL still available as an option for its users.

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[17] See http://www.gnu.org/patent-examp/patent-examples.html.

[18] See http://www.gnu.org/licenses/fdl.html.

Those same ideas have also given birth to other movements to create works which can be shared and changed, even when they did not use the licenses published by the Foundation. Creative Commons publishes its own licenses that allow people to distribute and modify the works they cover, and are meant to be applied to a wide variety of works; current estimates suggest that these licenses have been used by 250 million works at minimum worldwide.[22] Most of these licenses grant permissions and have associated conditions similar to those in the Foundation's licenses. Executives at Creative Commons have frequently cited the Foundation as providing the basis for their own efforts.[23]

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[19] See http://icommons.org/articles/commoner-profile-10-questions-for-jimmy-wales; see also http://mixergy.com /wikipedias-founder-jimmy-wales/.

[20] See http://lists.wikimedia.org/pipermail/foundation-l/2009-June/052616.html.

[21] See http://en.wikipedia.org/wiki/User:R._fiend/How_many_articles_does_Wikipedia_really_have%3F.

[22] See http://wiki.creativecommons.org/Metrics.

[23] See http://creativecommons.org/weblog/entry/13568.

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While supporting the result sought by Respondent (i.e., affirming the judgment of the Federal Circuit Court of Appeals of unpatentability of the claimed subject matter of the Bilski et al. patent application), the Foundation hopes this brief provides the Court a broader context and approach to software patenting limitation, which goes beyond the two part test derived by the Court of Appeals for the Federal Circuit from this Court's decision in *Diamond v. Diehr*, 450 U.S. 175 (1981). The Foundation is aligned in part, but only in part, with the separate opinion of Judge Mayer.[24]

Notwithstanding the contrary assertion at sec. I.C.3 (pages 36-44) of Respondent's brief, the Foundation submits respectfully that this case is an appropriate one to address patenting eligibility of computer software. Several amici aligned with both parties of this case so regard it and indeed the court of appeals eschewed a categorical exclusion of business methods and, instead, applied the machine-transformation test to a claimed process which was implicitly software-based though not reciting software directly in its broadest independent claim.

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[24] See *In re Bilski*, 545 F.3d 943, 998-1011 (Fed. Cir. 2008).

SUMMARY OF ARGUMENT

The Foundation asserts that software patents hinder the progress of software development and distribution, are unjust and cause deleterious socioeconomic effects upon the advancement of technology in the United States for society's benefit. The Foundation further takes the position that computer software patents do not "promote the Progress of Science and useful Arts," and therefore are not constitutionally justified. Clarification or expansion of the "particular machine or transformation" test is appropriate to prevent the USPTO from granting software patents and to reduce uncertainty for those developing software.

An information processing algorithm with no physical manifestation of any sort is beyond the bounds of patentability. This Court has repeatedly ruled that an information processing algorithm with "insignificant post-solution activity" appended should still not be patentable. Notably, claims for an information processing algorithm loaded in a standard way onto a standard computer were repeatedly ruled to be invalid. The Court in *Diamond v. Diehr*, 450 U.S. 175, 182 (1981), set forth a clear criterion that information processing algorithms dressed in physical terminology are not eligible to be patents, although other, more involved types of software-on-a-machine could be patentable when "considered as a whole."

Unfortunately, subsequent rulings from the Federal Circuit have applied only the second half of this criterion, thereby elevating the exception to the rule and inventing a doctrine whereby *any* claim which includes software must be "taken as a whole" when examined for patent-eligibility. If this line of Federal Circuit cases continues, and the holistic second half of the *Diehr* holding is treated as the entire ruling, patent examiners would be barred from inquiring whether claims such as those present in the Bilski patent are merely information processing claims recited in a manner that circumvents limitations on patent eligibility. Instead, examiners would be obligated to accept any artfully styled claim as patent-eligible.

The Foundation suggests that the Court could conform to its earlier precedent whereby claims for information processing with trivial physical dressing are excluded from patent-eligibility, either via a standard Section 103 analysis or via a comparable dissection under Section 101. However, either method requires striking down the artificial doctrine that inventions with software – and only inventions with software – must be "considered as a whole" in relation to Section 101.

There is wisdom in this Court's repeated attempts to ensure that information processing algorithms remain outside the scope of patent law, even in manifestations where "insignificant post-solution activity" is appended. Such a limitation on patent-eligible subject matter should be respected and enforced, and for good reason: allowing such patents has had perverse economic effects. First, litigation regarding software is increasingly targeted not at producers in the "information processing sector," but rather at parties in the general economy who are independently reinventing software in the course of business. Second, the increased risk of liability brought about by the expansion of patent law to include software and business methods has sparked debate about the validity of the patent system at large.

ARGUMENT[25]

I. THIS COURT'S JURISPRUDENCE CONCERNING SOFTWARE PATENTS HAS APPROPRIATELY EXPRESSED A TEMPERED APPROACH, BUT SUBSEQUENT RULINGS BY LOWER COURTS THREATEN TO UPSET THE BALANCE STRUCK BY THIS COURT OVER THIRTY YEARS AGO.

A. THIS COURT HAS RULED THAT INFORMATION PROCESSING ALGORITHMS WITH "INSIGNIFICANT POST-SOLUTION ACTIVITY" ARE BARRED FROM PATENT-ELIGIBILITY.

There is little controversy that information processing algorithms in their pure, ethereal forms, with no physical component or manifestation of any sort, are excluded from patentability.[26] However, what is under debate is how much of a physical manifestation an information processing algorithm must have before it is patentable.

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[25] The Foundation acknowledges, with gratitude, the substantial work of research, compilation, analysis and drafting contributed to this brief by Ciarán O'Riordan and End Software Patents (ESP), a not-for-profit organization. See http://endsoftpatents.org/. Mr. O'Riordan is the Executive Director of ESP

[26] Novel mathematics, for example, is outside the scope of patent-eligibility. "Whether the [mathematical] algorithm was in fact known or unknown at the time of the claimed invention ... it is treated as though it were a familiar part of the prior art." *Parker v Flook*, 437 U.S. 584, 591-92 (1978) (internal citation omitted).

In a trio of opinions issued over the span of nine years, this Court clearly rejected the patentability of an information processing algorithm with "insignificant post-solution activity" appended. First, in *Gottschalk v. Benson*, 409 U.S. 63 (1972), the Court quoted approvingly the 1966 President's Commission on the Patent System:

> Direct attempts to patent programs have been rejected on the ground of nonstatutory subject matter. Indirect attempts to obtain patents and avoid the rejection, by drafting claims as a process, or a machine or components thereof programmed in a given manner, rather than as a program itself, have confused the issue further and should not be permitted.[27]

Second, in *Parker v. Flook*, 437 U.S. 584 (1978), this Court made a more general statement, reiterating the position that loading an algorithm onto a standard computer is merely an attempt to circumvent recognized limitations: "The notion that post-solution activity, no matter how conventional or obvious in itself, can transform an unpatentable principle into a patentable process exalts form over substance. A competent draftsman could attach some form of post-solution activity to almost any mathematical formula." *Id.* at 590.

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[27] *Id.* at 72 n.5 (*quoting* "To Promote the Progress of ... Useful Arts," Report of the President's Commission on the Patent System, at 13 (1966)).

Third, in *Diamond v. Diehr*, 450 U.S. 175 (1981), the Court directly reiterated its two previous holdings, while also acknowledging that bona fide, patent-eligible inventions may *include* a software component:

> A mathematical formula as such is not accorded the protection of our patent laws, *Gottschalk v. Benson*, 409 U.S. 63 (1972), and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment. *Parker v. Flook*, 437 U.S. 584 (1978). Similarly, insignificant post-solution activity will not transform an unpatentable principle into a patentable process. *Ibid.* To hold otherwise would allow a competent draftsman to evade the recognized limitations on the type of subject matter eligible for patent protection. On the other hand, when a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (e. g., transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of [Section] 101.

Id. at 191-92.

The phrase "considered as a whole," in relation to subject matter eligibility, does not appear in Sections 100 or 101 of Title 35 of the United States Code (although it does appear in section 103 concerning obviousness determinations); rather, it originates in the above-quoted statement from *Diehr*, 450 U.S. at 192, and therefore its meaning should be evaluated in the context of the balance in which it was presented. In particular, the *Diehr* ruling demarked a dichotomy between designs that have only "insignificant post-solution activity," on the one hand, and processes which, "considered as a whole," fall under the scope of patent-eligible subject matter, on the other. The full statement directs that an inquiry first be made into whether a claimed invention is information processing with "insignificant post-solution activity." Once undertaken, that inquiry may lead to the conclusion that the invention involves significantly more and should be patent-eligible.[28]

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[28] This inquiry is carried out in the text of the *Diehr* opinion. For example, the Court determined that the equation-plus-alarm claim that was at issue in *Flook* was merely an attempt to patent an equation, whereas Diehr's machine went well beyond the underlying software. See *Diehr*, 450 U.S. at 186-87.

B. THE FEDERAL CIRCUIT'S BROAD APPLICATION OF THE "CONSIDERED AS A WHOLE" DOCTRINE RELIES UPON A MISLEADING INTERPRETATION OF SUPREME COURT PRECEDENT, AND THIS HOLISTIC APPROACH HAS RESULTED IN THE EXCEPTION SWALLOWING THE RULE.

The *Diehr* analysis is correct, but as applied by the Federal Circuit, has improperly evolved into a one-sided doctrine whereby all claims, including software claims, are preliminarily "taken as a whole" when assessing their Section 101 eligibility for patenting. Rulings by the Court of Appeals for the Federal Circuit in *In re Alappat*, 33 F.3d 1526, 1543 (Fed. Cir. 1994), *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 1374 n.6 (Fed. Cir. 1999), and *AT&T Corp. v. Excel Communications Inc.*, 172 F.3d 1352, 1356-59 (Fed. Cir. 1999), are based only on the second half of the *Diehr* standard. That is, these rulings state that a claim must be considered "as a whole," while wholly disregarding the counterbalancing statement that some inventions are merely unpatentable formulae with "insignificant post-solution activity."

The result is an extreme doctrine that has damaged patent law, and allowed the patentability of elements that would not be patentable under any of the above Supreme Court rulings. Under this distorted automatic approach to the "considered as a whole" doctrine, the Bilski claim (intended to be read as information processing with a not-novel, obvious physical step appended) and the typical Beauregard claim (for a standard computer memory device upon which is loaded a new work of software) are nevertheless deemed patentable, even though they could (and should) easily be dissected into an information processing step and "insignificant post-solution activity." When viewed through the Federal Circuit's clouded lens, even the claim in *Flook* would be read as a patent-eligible alarm, instead of the dressed-up, unpatentable equation that the *Diehr* ruling took it to be.

Such a result is wrong, and the Court in this case has the opportunity to prevent the "considered as a whole" language of *Diehr* from being considered as *the* whole of that ruling, which it is not. If left unchecked, an incorrect legal standard would prohibit examiners from inquiring whether claims such as those present in the Bilski patent are merely information processing claims recited in a manner that circumvents limitations on patent-eligibility, as opposed to bona fide patent-eligible inventions. Instead, examiners would have to accept any correctly worded claim as patent-eligible, thereby elevating form over substance.

C. THE SECTION 103 INQUIRY COULD ACHIEVE THE SAME EFFECT, BUT IS ALSO BLOCKED BY THE "AS A WHOLE" DOCTRINE.

The preceding discussion of the Section 101 inquiry advises a dissection of a patent application that is in many ways comparable to the inquiry of non-obviousness under 35 U.S.C. § 103. When evaluating the non-obviousness of a patent application, the following process is prescribed: "Under 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter [as a whole] is determined." *Graham v. John Deere Co. of Kansas City*, 383 U. S. 1, 17 (1965).

As the *Diehr* ruling acknowledges, the combination of information processing and machinery is sometimes greater than the sum of its parts; the same could be true of combinations in a Section 103 context. But in a parallel manner, this Court's ruling in *KSR v. Teleflex*, 550 U.S. 398 (2007), points out that if a combination of elements in the prior art is "obvious to try," the combination does not pass the conditions of Section 103. Given a set of rules for information processing – such as Bilski's hedging scheme or any computationally-intensive number-crunching scheme – it is blatantly obvious to try loading the algorithm onto a standard computer. In fact, in *Northern Telecom v. Datapoint*, 908 F.2d 931, 940-41 (1990), the Federal Circuit ruled that loading an algorithm onto a computer is a "mere clerical function." That is, a software-plus-computer claim consists of one piece of prior art (an information processing algorithm), a second piece of prior art (a standard, unmodified computer), and the obvious-to-try combination of one with the other.

II. FOR MANY SOFTWARE DEVELOPERS, THE PATENT SYSTEM IS UNJUST.

Development in a domain where ideas are patentable carries risks. In certain domains, such as the manufacturing of vehicles and pharmaceuticals, product developers are almost always large companies. Because they have the resources for manufacturing, and thereafter attaining the necessary government approval for their product, it is reasonable to assume these companies also have the resources to perform patent searches, get legal opinions and, if necessary, mount a defense when accused of patent infringement. Manufacturing vehicles and pharmaceuticals is inherently expensive, with or without the patent system, so manufacturers can be assumed to be prepared to expend money. The expense of the patent system does not change who can participate, but rather, simply increases the cost.

None of these factors apply for software. Software is developed not just by large companies, but also by small companies, project communities, students, and individuals. Participation in software development has no fundamental need to consume any resource (other than, perhaps, one's time spent at a computer). Thus, it cannot be assumed that developers active in the field of software have the resources to perform patent searches, nor that they expect to incur expenses for their activity. This leaves many developers in a situation where they cannot afford the legal resources necessary to minimize their risk of infringement, and if accused of violating a patent, they cannot afford to defend themselves. The system is disproportionately expensive, by orders of magnitude.

This inability to participate on an even basis amplifies the problem, but there is also a deeper problem: losing control of one's computing in his or her daily life. Because individuals can write software, they can help themselves and solve their own problems. Given that software development includes common activities such as making a webpage, the freedom to use a computer as one sees fit for his or her daily life is a fundamental form of expression, just as using a pen and paper is.

III. COMPUTER SOFTWARE PATENTS CAN COMPROMISE COMPATIBILITY AND DATA FORMAT SPECIFICATIONS.

In software, access to data format specifications holds a role of importance unparalleled in other fields. Examples of data that come in specific formats include email, images, and word processing documents. In the context of writing an email reader, a word processor, or an image viewer, being blocked from reading, modifying, or writing in the required data format is equivalent to being banned from writing a functional program for that task.

This gives too much power to the holder of a patent on a widely used format. In terms of the proper functioning of the software industry, this power is harmful to competition. In terms of individuals, it translates to banning them from writing useful software for themselves and for others. In some fields of development, the barriers made by patents may spur useful innovation when developers search for a different way to accomplish a patented task. With data formats, this type of innovation is impossible to encourage because by reading or writing the data differently, the software would be failing its compatibility objective.

Software patents can also hold back freely implemented standards such as those that structure the World Wide Web. HTML version 4 has been the standard for web pages since 1997. Efforts are ongoing to produce its successor, HTML5. This effort is making progress, except concerning which video format to recommend. Due to patents, the popular "MPEG H.264" video format cannot be recommended because it cannot be implemented without permission. The other option was the patent-free Ogg Theora format, but when improving the quality of this format was discussed, Chris DiBona of Google said, "Here's the challenge: Can [T]heora move forward without infringing on the other video compression patents?"[29]

Yet another way in which compatibility is essential is in the look and control of an application. If one develops an innovative word processor which doesn't resemble any existing word processor, it will be difficult for people to use. Software users have certain expectations. Using new design paradigms can be useful, but it adds initial inconvenience for the users, so this change should only be made if the benefits clearly outweigh the annoyance to users. Having a strange interface because of patent problems is not beneficial for computer users.

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[29] See http://www.mail-archive.com/whatwg@lists.whatwg.org/msg15476.html.

IV. THE CONTINUED BROAD ALLOWANCE OF SOFTWARE CLAIMS PLACES UNJUST RESTRICTIONS ON EVERYONE AND HAS RESULTED IN PERVERSE ECONOMIC EFFECTS AND AN EPIDEMIC OF LITIGATION.

Litigation regarding software is increasingly targeted not at producers in the information processing sector, but at persons in the general economy who are independently reinventing course-of-business software.

One large software project has been the subject of two analyses. First, the Linux kernel – which is the kernel of the widely used GNU/Linux operating system – was examined by patent attorney Dan Ravicher, who announced on August 2, 2004, that he had found no court-validated patents to be infringed by the Linux kernel, although 283 *issued* patents existed which could potentially be used to support patent claims against it.[30] Thereafter, Microsoft in the year 2007 began claiming that the Linux kernel violates 235 of its patents - although the patents have never been specified.[31]

Yet the kernel Linux is just one component of the GNU/Linux operating system. The kernel Linux's human-written source code is publicly available, and contains approximately 4,000,000 (four million) lines of source code. Accounting for the two suggestions discussed in the preceding paragraph about the number of patents possibly violated, one ends up with one instance of patent infringement for every 14,275 to 17,191 lines of code. Taking the one calculation one step further, given the fact that complete GNU/Linux operating systems, often distributed with sets of applications, can contain software with more than 225 million lines of source code, we arrive at the possibility of 13,160 or 15,848 patent infringements per complete distribution.[32] The resulting legal entanglements would be simply absurd. This massive uncertainty is what this Court can end by clearly excluding software ideas on computers from patentability.

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[30] See http://www.osriskmanagement.com/press_releases/press_release_080204.pdf.

[31] See Roger Parloff, *"Microsoft Takes On The Free World,"* FORTUNE (May 14, 2007), *available at* http://money.cnn.com/ magazines/fortune/fortune_archive/2007/05/28/100033867/.

A second example is the previously mentioned MPEG H.264 video format. This one format is covered by patents from numerous companies and institutions, including Columbia University, Electronics and Telecommunications Research Institute of Korea (ETRI), France Télécom, Fujitsu, LG Electronics, Matsushita, Mitsubishi, Microsoft, Motorola, Nokia, Philips, Robert Bosch GmbH, Samsung, Sharp, Sony, Toshiba, and Victor Company of Japan (JVC).[33]

Not only do these two examples demonstrate the absurd situation created by granting patents on something as complex and abstract as software,[34] but the latter instance is also an example of an important standard the implementation of which depends on permission from patent holders. In other industries, practitioners may know which companies in their field are applying for patents which might be pertinent. In software, the number of practitioners is too great for it to be possible to know which companies or groups one should monitor for applications or pertinent patents. As researcher Ben Klemens, who estimates the cost of software patents to the United States economy to be $11.26 billion per year, points out, "Any company with a web site could be liable for software patent infringement."[35] In fact, the risks of patents on software are not limited to companies that consider themselves software companies, and Klemens notes that among the companies facing litigation for violating one particular software patent are CDW Corp., Motorola, the Green Bay Packers, OfficeMax, Caterpillar, Kraft Foods, ADT Security Services, AutoNation, Florida Crystals Corp., HearUSA, Tire Kingdom, and Boca Raton Resort and Club.[36]

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[32] See http://www.upgrade-cepis.org/issues/2005/3/up6-3Amor.pdf.

[33] See http://www.mpegla.com/news/n_03-11-17_avc.html.

[34] Because software is a set of instructions to achieve a goal, there is often very little difference between the description of the goal itself and a description of one developer's method of achieving the goal. This abstract nature of software leads to

The increased risk of liability brought about by the expansion of patent law to include software and business methods has sparked debate about the validity of the patent system at large. Thus, there is wisdom in the Supreme Court's repeated attempts to ensure that information processing algorithms remain outside the scope of patent law, even in ma-

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overly-broad patents which cover many – or all – ways of solving a problem, rather than just covering the way the patent applicant chose to solve the problem.

[35] See http://endsoftwarepatents.org/28-february-2008: esp-releases-report-on-the-state-of-softpatents.

[36] Ibid.

nifestations where "insignificant post-solution activity" is appended. The limitations on patent-eligible subject matter should be respected and enforced.

V. INNOVATION CAN BE, AND HAS BEEN, ACHIEVED IN THE ABSENCE OF SOFTWARE PATENTS.

It may be surprising to many people that Microsoft Corporation is an example of a company built without patents. In 2005, Grace Murray Hopper Award-winning software developer Dan Bricklin and New York Times journalist Randall Stross researched the patent ownership history of Microsoft. The pair found that in 1987, when Microsoft had only had one patent granted to them, their revenue was $350 million. By 1990, the corporation had five patents, and a revenue of $1.18 billion. By 1995, they still had only 77 patents, their revenue was $5.94 billion.[37] In other words, at the time Microsoft completed its Windows 95 operating system, Microsoft still had only 77 patents. The development of its flagship product was fostered by copyright, not patents. Though copyrights possess their own problems, those problems are more solvable under the current law, and copyrights do not block independent development as patents do.

On February 10, 2009, Microsoft announced that it had been granted its 10,000th patent. Since 1995, the company's premier position in the operating systems and word processor markets have not changed. More recently, since at least 2006, Microsoft has been approaching distributors of other operating systems and demanding payments of patent royalties. One could deduce that patents didn't help them compete with others, but did help them entrench the position gained. Also, Microsoft's current long-standing dominance and its recent use of its patents are strikingly similar to the problems that Bill Gates predicted in 1991 about industry standstill and patents being used to take profits of other software companies.[38]

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[37] See Randall Stross, "*Why Bill Gates Wants 3,000 New Patents*," New York Times (July 31, 2005), available at http://www.nytimes.com/imagepages/2005/07/30/business/yourmoney/20050731_DIGI_GRAPHIC.html.

The GNU/Linux operating system is another example of a top class operating system built on copyrights, not patents. GNU/Linux uses copyright much differently than Microsoft. Before 1995, GNU/Linux was developed by individuals, communities, universities, and those who developed software as a side activity to use for other work. The license used by the majority of free software, the GNU General Public License, does not allow distributors to use patents to require royalties[39] – thus excluding, for example, licensing the MPEG H.264 under its current terms.

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[38] See *supra*, pp. 10-11, n.11.

[39] Section 7 of Version 2 of the GNU GPL states: "If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all."

VI. NOTABLE ANALYSES HAVE NOTED THE RISKS POSED BY SOFTWARE PATENTS.

Experts from around the globe repeatedly have concluded that software patents are not good for progress, innovation, or the economy:

- Bessen & Hunt – MIT: "'Thus the extension of patent protection to software did not generate a relative increase in R&D spending as predicted by the static model; instead, consistent with the dynamic model, R&D spending seems to have remained roughly steady or to have declined."[40]

- Bessen & Maskins: "The very large increase in software patent propensity over time is not adequately explained by changes in R&D investments, employment of computer programmers, or productivity growth. [...] We find evidence that software patents substitute for R&D at the firm level; they are associated with lower R&D intensity."[41]

- U.S. Federal Trade Commission: "The software and Internet industries generally are characterized by five factors: (1) innovation occurs on a cumulative basis; (2) capital costs are low, particularly relative to the pharmaceutical, biotechnology and hardware industries; (3) the rate of technological change is rapid, and product life cycles are short; (4) alternative means of fostering innovation exist, including copyright protection and open source software; and (5) the industries have experienced a regime change in terms of the availability of patent protection. Panelists consistently stated that competition drives innovation in these industries. Innovation is also fostered by some industry participants' use of copyright protection or open source software. Several panelists discounted the value of patent disclosures, because the disclosure of a software product's underlying source code is not required. Many panelists and participants expressed the view that software and Internet patents are impeding innovation. They stated that such patents are impairing follow-on incentives, increasing entry barriers, creating uncertainty that harms incentives to invest in innovation, and producing patent thickets. Panelists discussed how defensive patenting increases the complexity of patent thickets and forces companies to divert resources from R&D into obtaining patents. Commentators noted that patent thickets make it more difficult to commercialize new products and raise uncertainty and investment risks. Some panelists also noted that hold-up has become a problem that can result in higher prices being passed along to consumers."[42]

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[40] James Bessen & Eric Maskin, Sequential Innovation, Patents, And Imitation (Jan. 2000). Massachusetts Institute of Technology, Department of Economics Working Paper, *available at* http://www.researchoninnovation.org/patent.pdf.

[41] Bessen, James E. and Hunt, Robert M., An Empirical Look at Software Patents (March 2004). FRB of Philadelphia Working Paper No. 03-17, *available at* http://ssrn.com/abstract=461701.

- Lord Justice Jacob, Supreme Court of Judicature: "The patent system is there to provide a research and investment incentive but it has a price. That price (what economists call 'transaction costs') is paid in a host of ways: the costs of patenting, the impediment to competition, the compliance cost of ensuring non-infringement, the cost of uncertainty, litigation costs and so on. There is, so far as we know, no really hard empirical data showing that the liberalisation of what is patentable in the USA has resulted in a greater rate of innovation or investment in the excluded categories. Innovation in computer programs, for instance, proceeded at an immense speed for years before anyone thought of granting patents for them as such. There is evidence, in the shape of the mass of US litigation about the excluded categories, that they have produced much uncertainty. If the encouragement of patenting and of patent litigation as industries in themselves were a purpose of the patent system, then the case for construing the categories narrowly (and indeed for removing them) is made out. But not otherwise."[43]

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[42] US Federal Trade Commission, "To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy" (October 2003), *available at-* http://www.ftc.gov/os/2003/10/innovationrpt.pdf . This 315-page review of the United States patent system dedicated thirteen pages to "The Software and Internet Industries." The Foundation quotes the conclusion to this section in full.

- Report for the United Kingdom's Chancellor of the Exchequer: "The software industry in the USA grew exponentially without pure software patents, suggesting they are not necessary to promote innovation. The evidence suggests software patents are used strategically; that is, to prevent competitors from developing in a similar field, rather than to incentivise innovation."[44]

- Deutsche Bank Research: "Chances are that patents on software, common practice in the US and on the brink of being legalised in Europe, in fact stifle innovation. Europe could still alter course."[45]

- Report for The Netherlands Ministry of Economic Affairs: "There are particular threats to the European ICT industry such as the cur-

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[43] *Aerotel Ltd. v. Telco Holdings Ltd.*, 2006 EWCA Civ 1371 (C.A. 2006, Supreme Court of Judicature, Court of Appeals (Civil Division), on appeal from the High Court of Justice, Chancery Division (Patents Court)), *available at* http://www.patent.gov.uk/2006ewcaciv1371.pdf.

[44] Gowers Review of Intellectual Property (Nov. 2006), *available at* http://www.hm-treasury.gov.uk/d/pbr06_gowers_report_755.pdf. This review, conducted at the request of the United Kingdom's Chancellor of the Exchequer, was published after a year-long "independent review into the UK Intellectual Property Framework."

[45] Deutsche Bank Research, "Current Issues, More Growth In Germany" (June 22, 2004), *available at* http://www.dbresearch.com/PROD/DBR_INTERNET_EN-PROD/PROD0000000000175949.pdf.

> rent discussion on the patent on software. The mild regime of IP protection in the past has led to a very innovative and competitive software industry with low entry barriers. A software patent, which serves to protect inventions of a non-technical nature, could kill the high innovation rate."[46]

CONCLUSION

The decision below should be affirmed, and further clarified or expanded to ensure that no patents are granted for software running on a computer. Beyond that, this Court should recognize how its decisions in *Diehr*, *Parker* and *Gottschalk* have been misapplied in a manner that is no longer acceptable, and acknowledge that patenting software is inconsistent with the Constitution's mandate.

Respectfully submitted,

/s/ JERRY COHEN
JERRY COHEN
Counsel of Record
BURNS & LEVINSON LLP
125 Summer Street
Boston, Massachusetts 02110
(617) 345-3000

Attorney for Amicus Curiae
Free Software Foundation

October 2, 2009

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[46] PriceWaterhouseCoopers, Rethinking the European ICT Agenda, Report for The Netherlands Ministry of Economic Affairs (Aug. 2004), *available at* http://www.ez.nl/dsresource?objectid=62435&type=PDF.

AMICUS
CURIAE
BRIEF

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In The
Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,
v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari to the
United States Court of Appeals
for the Federal Circuit

BRIEF OF GEORGIA BIOMEDICAL PARTNERSHIP, INC. AS *AMICUS CURIAE* IN SUPPORT OF PETITIONERS

William H. Kitchens
Counsel of Record
Robert A. Hodges, PhD
David E. Huizenga, PhD
Scott E. Taylor
Heather Smith Michael
ARNALL GOLDEN GREGORY LLP
171 17th Street, NW
Suite 2100
Atlanta, Georgia 30363
(404) 873-8500

BOTH 4XD2VF

Counsel for Amicus Curiae Georgia Biomedical Partnership, Inc. d/b/a Georgia Bio

LANTAGNE LEGAL PRINTING
801 East Main Street Suite 100 Richmond, Virginia 23219 (800) 847-0477

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STATEMENT OF INTEREST OF THE *AMICUS CURIAE*

Georgia Biomedical Partnership, Inc. d/b/a Georgia Bio ("GaBio") is a non-profit, membership-based organization that promotes the interests and growth of the life sciences industry in Georgia. Members include companies, universities, research institutions, government groups and other industry associations involved in the discovery and application of life sciences products and related services that improve the health and well-being of people throughout the world. GaBio is the Georgia state affiliate of the Washington, D.C.-based Biotechnology Industry Organization (BIO).[1]

GaBio has an interest in this matter. GaBio submits that the Federal Circuit's decision in *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), will reduce the value of patents held by members of GaBio, as well as others in the biotechnology industry. GaBio further states that a broad reading of "patent-eligible subject matter" benefits the biotechnology industry because the limited monopoly provided by patent protection is often necessary to compensate for the large investment needed to bring biotechnology inventions to the public. Without the incentive of patent protection, many biotechnology inventions would not be developed for public use.

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[1] Petitioners have consented to the filing of all *amicus curiae* briefs in support of either or neither party. Respondent has consented to the filing of this *amicus curiae* brief on behalf of GaBio. Pursuant to Rule 37.6, the *amicus* states that no counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than the *amicus*, its members, or its counsel made a monetary contribution to the preparation or submission of this brief.

SUMMARY OF THE ARGUMENT

GaBio submits this *amicus* brief in support of Petitioners because this case is of special importance to the biotechnology and pharmaceutical industries. As Petitioners note, this case involves the most basic question in patent law: what is patentable? The Patent Code and this Court's decisions on this question support a broad view of what is patent eligible, with only limited exceptions. The Federal Circuit's decision in this case cuts off significant technologies from patent protection.

Although Petitioners' invention is a method of hedging financial risk (a so-called "business method patent"), the test adopted by the Federal Circuit to determine what is patent eligible can be, and already has been, applied to strike down a broad class of biotechnology and medical inventions, as pointed out by Petitioners. These types of biotechnology and medical inventions have long been patented, have been specifically considered by Congress and affirmatively included in the Patent Code, have considerable value to the public, and require patent protection to ensure their development. Without the limited monopoly provided by patent protection, the biotechnology and pharmaceutical industries cannot and will not make the large investments needed to commercialize these inventions for the benefit of the public. For this reason, this case has significance far beyond Petitioners' invention or even Petitioners' industry.

The Patent Code defines what can be patented. Included within this defined patent-eligible subject matter are processes. At the core of this case is the determination of the meaning and scope of "process." As defined in the Patent Code, a process includes a new use of a known process, machine, manufacture, composition of matter, or material. 35 U.S.C. § 100(b). Although the scope of a "process" as defined by the Patent Code is broad, this Court has determined that some limited subject matter is not patent eligible. In particular, this Court has held that "laws of nature, natural phenomena, and abstract ideas" are not patent eligible. *Diamond v. Diehr*, 450 U.S. 175, 185 (1981). In a misguided attempt to provide a definitive rule for determining what is patent eligible, the Federal Circuit adopted a mandatory test (referred to as the "machine-or-transformation" test) that, while purporting to define this Court's limited exceptions to patent-eligible subject matter, actually excludes far more inventions than those amounting to laws of nature, natural phenomena, and abstract ideas.

GaBio joins Petitioners' arguments and further submits that: (1) the Federal Circuit's "machine-or-transformation" test conflicts with Supreme Court precedent declining to adopt a rigid test for determining patent-eligible subject matter; and (2) the "machine-or-transformation" test conflicts with the proper construction of federal law defining what is a patent-eligible process.

The Federal Circuit held that its test was the *only* applicable test and required that the U.S. Patent & Trademark Office and lower courts apply this test when determining what is patent eligible. *Bilski*, 545 F.3d at 954, 964. Such a requirement clearly contradicts this Court's precedent, which has been careful not to establish a single test or formula for determining patent eligibility, recognizing that one size does not fit all inventions.

The Federal Circuit formulated its test as a "gateway" test for patent eligibility. An invention is patent eligible *only* if it meets the test. In other words, the Federal Circuit's test determines whether an invention *is* patent eligible. This too contradicts this Court's precedent, which consistently seeks to determine if the invention at hand is *not* patent eligible. This Court's jurisprudence aligns more closely with a "culling" test than a "gateway" test. This Court carefully "culls" subject matter that is not patent eligible rather than applying a one-size-fits-all test of patent-eligible subject matter.

In addition, the Federal Circuit's mandatory test excludes from the definition of "process" in one section of the Patent Code processes that are specifically contemplated as patent eligible in other sections of the Patent Code. This is contrary to the Patent Code and to the rules of statutory construction.

Accordingly, this Court should reverse the Federal Circuit's decision and correct the Federal Circuit's improper adoption of the inappropriately narrow and rigid "machine-or-transformation" test.

ARGUMENT

I. THE FEDERAL CIRCUIT'S "MACHINE-OR-TRANSFORMATION" TEST CONFLICTS WITH SUPREME COURT PRECEDENT DECLINING TO ADOPT A RIGID TEST FOR DETERMINING PATENT-ELIGIBLE SUBJECT MATTER

The Framers of the United States Constitution recognized the importance of patents when they empowered the U.S. Congress "[t]o promote the progress of science and the useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." U.S. Const. art. I, § 8, cl. 8. Based on this authority, Congress established a patent system early in our country's history. Congress codified this broad and open-ended power to promote the progress of science and the useful arts in what is now Title 35 of the United States Code. Section 101 of Title 35 defines what qualifies for patent protection:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. § 101.

A. The Federal Circuit's "Machine-Or-Transformation" Test Is Too Rigid And Categorical

In *In re Bilski*, 545 F.3d 943, 954 (Fed. Cir. 2008) (en banc), the Federal Circuit adopted a single test, the so-called "machine-or-transformation" test, as the exclusive and mandatory test for determining patent-eligible subject matter. In doing so, it incorrectly characterized Supreme Court precedent as follows: "The Supreme Court ... has enunciated a *definitive* test to determine whether a process claim is tailored narrowly enough to encompass only a particular application of a fundamental principle rather than pre-empt the principle itself." *Id.* (emphasis added). The Federal Circuit went on to determine that the "machine-or-transformation" test was the exclusive test for patent-eligible subject matter:

> Neither the PTO nor the courts may pay short shrift to the "machine-or-transformation" test by using purported equivalents or shortcuts such as a "technological arts" requirement. Rather, the "machine-or-transformation" test *is the only applicable test and must be applied*, in light of the guidance provided by the Supreme Court and this court, when evaluating the patent-eligibility of process claims.

Id. at 964 (emphasis added).

With the Federal Circuit's mandate in *Bilski* that the "machine-or-transformation" test is the *only* test for determining patent-eligible subject matter, the Federal Circuit contradicts this Court's precedent applying § 101 of the Patent Code, as well as this Court's avoidance of rigid and categorical rules for determining fact dependent inquiries in the complex area of patent law. For at least this reason, this Court should reverse.

B. Supreme Court Precedent On Patent Eligibility Is Flexible And Permissive

In adopting the "machine-or-transformation" test as the exclusive test for determining patent-eligible subject matter, the Federal Circuit cited *Diamond v. Diehr*, 450 U.S. 175 (1981), *Gottschalk v. Benson*, 409 U.S. 63 (1972), and *Parker v. Flook*, 437 U.S. 584 (1978). However, *Diehr*, *Benson*, and *Flook* do not mandate any exclusive, rigid test for determining patent-eligible subject matter, much less the "machine-or-transformation" test. Indeed, this Court has found that no collection of tests is even sufficient to define patent-eligible subject matter.

In *Benson*, this Court held that a particular algorithm for converting numerals in binary coded decimal form to numerals in binary form was not patent-eligible subject matter under § 101. 409 U.S. at 71-72. After reviewing the Court's prior cases on patent-eligible subject matter, the Court specifically declined to hold that "a process patent must either be tied to a particular machine or apparatus or must operate to change articles to a 'different state or thing.'" *Id.* In fact, the Court went further, stating that "[w]e do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents," *id.* at 71, thus signaling that no prior holding or combination of holdings on patent eligibility affirmatively defines the limits of patent-eligible subject matter. Hence, the Court rejected a single, categorical test—or even a combination of tests—for patent-eligible subject matter.

In *Flook*, this Court solidified *Benson's* rejection of the notion that any of the Court's previous tests could be dispositive, stating: "[a]s in *Benson*, we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents." 437 U.S. at 588 n.9. This language was selectively quoted in *Bilski*, but was editorially changed. Specifically, the Federal Circuit replaced "one of these qualifications of our earlier precedents" with "[the machine-or-transformation test]," thus obscuring *Flook's* conclusion that even the totality of this Court's precedents cannot be applied as a litmus test. *Id.*; *Bilski*, 545 F.3d at 956.

Diehr merely identified the "machine-or-transformation" test as one way of determining patentability. The *Diehr* Court held that a process for curing synthetic rubber that included the use of a mathematical formula was patent-eligible subject matter under § 101. 450 U.S. at 192-93. In analyzing the claimed process, the Court noted that "a physical and chemical process for molding precision synthetic rubber products falls within the § 101 categories of possibly patent-eligible subject matter. That respondents' claims *involve the transformation of an article*, in this case raw, uncured synthetic rubber, into a different state or thing cannot be disputed." *Id.* at 184 (emphasis added).

Thus, *Diehr* involved a process in which a transformation of an article took place. Because the "machine-or-transformation" test is permissive, as indicated in the prior cases of this Court, and because the process in *Diehr* involved a transformation, this Court appropriately applied it there. However, that such a process fell within the subset of the Court's cases involving the transformation and reduction of an article to a different state or thing does not establish that such was the *only* test intended by this Court, or the only basis on which a process can qualify as patent-eligible subject matter under § 101. Rather, the Federal Circuit misinterpreted this Court's precedent, which is merely consistent with the inclusion of the "machine-or-transformation" test as one way of determining patent eligibility, as mandating the "machine-or-transformation" test.

C. The Federal Circuit's "Machine-Or-Transformation" Test Conflicts With The Supreme Court's Approach To Patent Eligibility

As set forth above, GaBio agrees with Petitioners that the rigid application of the "machine-or-transformation" test conflicts with this Court's previous patent-eligible subject matter holdings. In addition, the very manner in which the Federal Circuit framed the question of what is patent-eligible subject matter as a rigid exclusionary test flatly contradicts prior direction from this Court on this issue. The Federal Circuit seeks to take many tests and many ways of determining how to identify what is patent eligible from its own jurisprudence and condense them to a single test. However, prior jurisprudence from this Court indicates that each test, and each way of determining patent-eligible subject matter, is permissive and that they are to be used as tools to verify that a claimed process is not disqualified as "a 'process' within the meaning of the Patent Act." *Benson*, 409 U.S. at 64; *see also Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948) (product not patent eligible because the qualities of the product are manifestations of laws of nature); *Mackay Radio & Tel. Co. v. Radio Corp. of Am.*, 306 U.S. 86, 94 (1939) (product created by applying a scientific truth is patent eligible); *Waxham v. Smith*, 294 U.S. 20, 21-22 (1935) (method that achieves a function is not unpatentable as an attempt to patent the function performed or a natural law); *Expanded Metal Co. v. Bradford*, 214 U.S. 366, 385-86 (1909) (method involving mechanical operations but not chemical transformation is patent eligible); *Dolbear v. American Bell Tel. Co.*, 126 U.S. 1, 534-35 (1888) (method using altered electrical current to transmit speech is patent eligible); *Tilghman v. Proctor*, 102 U.S. 707, 729 (1880) (process of chemical transformation not limited to a particular means or apparatus is patent eligible); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876) (process to achieve a result is patent eligible regardless of what instrument or machine is used to effect that result); *Rubber-Tip Pencil Co. v. Howard*, 87 U.S. 498, 507 (1874) (device embodying and applying an idea is patent eligible); *Corning v. Burden*, 56 U.S. 252, 268 (1853) (use of a machine to continuously process iron is not a patent-eligible method because it represents the function of the machine); *O'Reilly v. Morse*, 56 U.S. 62, 112-13 (1853) (method of using electromagnetism is not patent eligible as an attempt to protect a power of nature); *Le Roy v. Tatham*, 55 U.S. 156, 175 (1852) (process applying a principle is patent eligible).

This Court has consistently held that there are many ways to define patent-eligible subject matter and that the use of precedents should be *inclusive* rather than *exclusive*. This comports with the broad notion of patent-eligible subject matter starting with the U.S. Constitution and continuing through each iteration of the Patent Code, especially the broad definition of patent-eligible subject matter in § 101. It is much more logical and sensible to determine whether a particular process before an examiner or a court is *not* patent eligible than to try to define—for all time, in all circumstances, and in one test—what *is* patent eligible. Determining what is not patent eligible is precisely how this Court has consistently handled the question. A condensation of *Diehr*, *Benson*, and *Flook*, as well as other prior cases, reveals that this Court has chosen to provide relatively clear direction as to what is *not* patent eligible (indicating that laws of nature, natural phenomena, and abstract ideas cannot be patented per se), as opposed to what *is* patent eligible.

Indeed, *Diehr*, far from validating *Bilski's* "machine-or-transformation" test, confirms and distinguishes the application of different principles for determining patent-eligible subject matter. *Diehr* actually recites with favor a more general test of patent-eligible subject matter: "It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection." 450 U.S. at 188 (emphasis in original). The broad test set forth in *Diehr* in effect limits the exclusion of subject matter from patent eligibility. Even though

Diehr involved a process that transformed an article, the holding in *Diehr* was not based on the "machine-or-transformation" dichotomy of *Bilski*:

> On the other hand, when a claim containing a mathematical formula *implements or applies* that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (*e.g.*, transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101.

Id. at 192 (emphasis added). Thus, contrary to the reasoning in *Bilski*, *Diehr* does not establish or support the "machine-or-transformation" test as the only test for determining patent-eligible subject matter. Instead, the rigid "machine-or-transformation" test of *Bilski* conflicts with this Court's precedent.

D. The Federal Circuit's "Machine-Or-Transformation" Test Conflicts With The Supreme Court's Interpretation Of The Patent Statute

The Federal Circuit in *Bilski* also failed to give sufficient weight to the constitutional and statutory source of patent-eligible subject matter. The Constitution grants Congress broad power to promote the progress of science and the useful arts. Under this broad power, Congress has enacted a broad definition of patent-eligible subject matter. As this Court has repeatedly noted, the definition and scope of patent-eligible subject matter provided in § 101 is broad and without specific limits. *See Diehr*, 450 U.S. at 188; *Diamond v. Chakrabarty*, 447 U.S. 303, 309-10 (1980) (statutory subject matter intended to include "anything under the sun that is made by man") (citations omitted); *Flook*, 437 U.S. at 588 n.9 ("As in *Benson*, we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents"); *Benson*, 409 U.S. at 71 ("We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents").

It is in this context that this Court has found careful, *limited* exceptions to the statutory mandate of broad patent-eligible subject matter. The Patent Code does not provide any exceptions and so, appropriately, this Court has made them of the most limited scope. The exceptions are rooted in the principle that only "[p]henomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work." *Benson*, 409 U.S. at 67. The Federal Circuit apparently lost sight of this limited basis for exceptions and misread Supreme Court precedent to produce an unwarranted and unsupported extension and expansion of this Court's limited exceptions to patent-eligible subject matter. Neither the Patent Code nor the exception for laws of nature, natural phenomena, and abstract ideas support the *effect* of the Federal Circuit's "machine-or-transformation" test, which is to exclude from patent protection inventions that meet the requirements of the Constitution and the Patent Code.

This Court's framework of finding limited exceptions to patent eligibility is akin to a "culling" of subject matter that is not patent eligible. In contrast, the Federal Circuit's categorical "machine-or-transformation" test is more like a "gateway," through which no invention can pass unless it has the particular attributes of patent-eligible subject matter set forth in *Bilski*. Many sound inventions that should never be culled will be blocked at the Federal Circuit's "machine-or-transformation" gate.

II. THE FEDERAL CIRCUIT'S "MACHINE-OR-TRANSFORMATION" TEST CONFLICTS WITH THE PROPER CONTRUCTION OF FEDERAL LAW

At issue in *Bilski* was the meaning of "process," as used in § 101 of the Patent Code. The § 101 definition of "process" established in *Bilski* contradicts the construction and clear meaning of "process" in other parts of the Patent Code. Because such a conflict between different sections of the same statute cannot stand under clear Supreme Court precedent, *Bilski's* § 101 definition of "process," and the "machine-or-transformation" test that depends on this definition, are inconsistent with federal law. For this reason as well, this Court should reverse.

The area of conflict between the *Bilski* decision and the statute discussed here by GaBio is different from the statutory conflict identified by Petitioners. In this discussion, GaBio demonstrates a broader Congressional intent not to limit patent-eligible subject matter and shows that the Patent Code contemplates and authorizes patent protection for biomedical and biotechnological inventions that would be excluded from patent eligibility by *Bilski's* "machine-or-transformation" test.

A. Supreme Court Principles Of Statutory Construction Require Harmony Between Different Sections Of The Same Statute

It is a fundamental principle of statutory construction that provisions in the same act are to be construed in harmony. *See Peck v. Jenness*, 48 U.S. 612, 623 (1849). Moreover, an act is to be read as a whole, with an eye to its underlying context, object, and policy. *Richards v. U.S.*, 369 U.S. 1, 11 (1962). "[E]very section, provision, and clause of a statute shall be expounded by a reference to every other; and if possible, every clause and provision shall avail, and have the effect contemplated by the legislature." *Peck*, 48 U.S. at 623. In effecting Congressional intent, courts must "give full effect to all the provisions of the act." *Id.* at 623; *see also Richards*, 369 U.S. at 11 (adopting the construction that is most "consistent with the Act considered as a whole"); *Mastro Plastics Corp. v. National Labor Relations Bd.*, 350 U.S. 270, 286-87 (1956) (rejecting proposed construction of statute because of incongruous effect that would undermine the underlying purpose of the act).

Thus, statutes should be construed with due regard for their counterparts. No interpretation should undermine a neighboring provision without express direction from Congress. *Cf. Peck*, 48 U.S. at 623. In *Bilski*, the Federal Circuit interpreted "process" under § 101 so as to exclude some patent-eligible "uses of compositions" and "biotechnology processes" contemplated under § 287(c) of the Patent

Code, even though the express statutory language does not support or provide for that limitation. Furthermore, the *Bilski* definition of "process" conflicts with the clear meaning of "a new use of a known process" in § 100(b) of the Patent Code. The *Bilski* decision therefore creates disharmony between different sections of the Patent Code (§§ 100(b), 101, and 287(c)) where none need exist and, indeed, where principles of statutory construction provide that it shall not exist. It is possible to interpret "process" so as to give full effect to all patent-eligible processes contemplated by the express terms of §§ 100(b) and 287(c). Section 101's reach should comport with the purposes and expansive intent behind the Patent Code, considering that provision not in isolation, but in harmony with the remainder of the Code.

B. Section 287(c) Of The Patent Code Contemplates As Patent Eligible Biomedical Inventions That Are At Risk Of Exclusion By *Bilski's* "Machine-Or-Transformation" Test

Section 287(c) of the Patent Code contemplates patent protection for biomedical and biotechnological processes excluded by *Bilski's* "machine-or-transformation" test. Because, as set forth above, statutes in the same act are to be construed in harmony and statutes should be construed with due regard to their counterparts, the processes contemplated by § 287(c) must fall within the definition of "process" in § 101 of the Patent Code. Nevertheless, the *Bilski* test impermissibly excludes at least some of the processes contemplated by § 287(c).

Section 287(c) of the Patent Code exempts medical practitioners from patent infringement liability when their performance of a "medical activity" infringes a patent. 35 U.S.C. § 287(c)(1). This exemption is itself limited by the exclusion of three enumerated activities from the definition of "medical activity." *Id.* at § 287(c)(2)(A). Specifically, § 287(c) does not exempt medical practitioners from infringement liability if the activity they perform is "(i) the use of a patented machine, manufacture, or composition of matter in violation of [the] patent, (ii) the practice of a patented use of a composition of matter in violation of [the] patent, or (iii) the practice of a process in violation of a biotechnology patent." *Id.*

As explained below, "use of a composition of matter" and "a process in violation of a biotechnology patent" encompass more processes than just those that transform an article or use a particular machine, as required by the *Bilski* test.[2] 35 U.S.C. § 287(c)(2)(A). Thus, *Bilski's* "machine-or-transformation" test excludes from patent eligibility some processes clearly considered patent eligible in another section of the same statute.

The legislative history of § 287(c) makes the scope of processes contemplated in that section especially clear and highlights the discord between the processes contemplated there and the limited scope of patent-eligible subject matter allowed under *Bilski*. The amendment that became § 287(c) initially proposed barring patents on medical activities. 142 Cong. Rec. H8275-79 (daily ed. July 24, 1996). Over strenuous objection to the breadth of the amendment—but not to the intent of insulating doctors from certain types of infringement—the Senate version was altered to exempt doctors from infringement liability, but *not* to bar the patenting of medical activities. *Id.* In a discussion of the definition ultimately adopted in § 287(c), the Committee stated:

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[2] GaBio notes that the Patent Code defines a "process" as including "use of a composition of matter." 35 U.S.C. § 100(b).

> 'Uses of compositions of matter' include, without limitation, novel uses of drugs, novel uses of chemical or biological reagents for diagnostic purposes, novel methods for scheduling or timing administration of drugs, novel methods for combining drug therapies, and novel methods for providing genetic or other biological materials to a patient (including gene therapies.) [sic] A particular example would be a claim that recites only the novel use of a drug for the treatment of diabetes that involves the administration of a drug at a particular time of day and/or at a specified dose and/or with a specified concomitant medicinal therapy could not be construed as a 'medical activity.'

H.R. Rep. No. 104-863, at 854 (1996) (Conf. Rep.).

Thus, Congress intended to exclude "uses of chemical or biological reagents for diagnostic purposes" and "methods for scheduling or timing administration of drugs" from § 287(c)'s definition of "medical activity." *Id.* Congress contemplated these activities as the subject of patents and thus as patent-eligible subject matter. Yet, many such "uses of chemical or biological reagents for diagnostic purposes" and "methods for scheduling or timing administration of drugs," *id.*, may not involve the "transformation of an article" or the use of a "particular machine," as required in *Bilski's* "machine-or-transformation" test. *Bilski*, 545 F.3d at 954. An example of this is discussed below. Thus, the *Bilski* test excludes from patent eligibility some processes considered patent eligible in another section of the same statute.

GaBio sees special urgency for the present case to correct this conflict with § 287(c) of the Patent Code because the Federal Circuit has already used the *Bilski* test to invalidate a claim that both uses a "chemical or biological reagent[] for diagnostic purposes" and is a "method[] for scheduling or timing administration of drugs." H.R. Rep. No. 104-863, at 854 (1996) (Conf. Rep.). In *Classen Immunotherapies, Inc. v. Biogen Idec*, 304 Fed. Appx. 866, 2008 WL 5273107, at *1 (Fed. Cir. 2008), in a one paragraph opinion, the Federal Circuit held that a claim to a method of determining whether an immunization schedule affects the incidence or severity of a chronic immune-mediated disorder failed the *Bilski* "machine-or-transformation" test. Thus, although the *Classen* claim arguably fell within the meaning of § 287(c)(2)(A), the Federal

Circuit held that it fell outside the definition of a process in § 101.[3]

The claim at issue in *Classen* reads:

> A method of determining whether an immunization schedule affects the incidence or severity of a chronic immune-mediated disorder in a treatment group of mammals, relative to a control group of mammals, which comprises immunizing mammals in the treatment group of mammals with one or more doses of one or more *immunogens*, according to said immunization schedule, and comparing the incidence, prevalence, frequency or severity of said chronic immune-mediated disorder or the level of a marker of such a disorder, in the treatment group, with that in the control group.

U.S. Pat. No. 5,723,283, claim 1 (emphasis added); *see also Classen Immunotherapies, Inc. v. Biogen Idec*, Civil No. WDQ-04-2607, 2006 WL 6161856, at *5 (D. Md. Aug. 16, 2006), *aff'd*, 304 Fed. Appx. 866 (Fed. Cir. 2008).

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[3] Notably, 35 U.S.C. § 287(c) was not at issue in *Classen*. However, the claim in *Classen* is an example of the type of invention that § 287(c) may have contemplated as patent eligible, and the Federal Circuit's invalidation of that claim using *Bilski's* "machine-or-transformation" test is inconsistent with the scope of patent-eligible biomedical processes, as established in § 287(c) of the Patent Code.

Without commenting on whether the claim at issue in *Classen* should or should not fall within the § 287(c) exemption, one cannot doubt that Congress understood that § 101 encompassed the type of activity embodied by the *Classen* claim when it amended the Patent Code by adding § 287(c) precisely to address such activities by doctors. The *Bilski* "machine-or-transformation" test thus unduly restricts Congressional intent regarding what can be a patent-eligible process.

One can also analyze the *Classen* claim from the perspective of § 287(c)'s "process in violation of a biotechnology patent." 35 U.S.C. § 287(c)(2)(A). While the Patent Code itself does not define "biotechnology patent," during the legislative process, Congress stated that a biotechnology patent is "... a process of making or using biological materials, including treatment using those materials, where those materials have been manipulated *ex vivo* at the cellular or molecular level." H.R. Rep. No. 104-863, at 854 (1996) (Conf. Rep.). Congress went on to state:

> Biological materials which may be manipulated *ex vivo* at the cellular or molecular level include a variety of cellular, intracellular, extracellular, and acellular substances. Cellular substances include (but are not limited to) cultured microbial and mammalian cells. Intracellular substances include (but are not limited to) genetic materials, such as DNA and RNA that is obtained from within the cell. Extracellular

> substances include (but are not limited to) proteins and other molecules that are secreted or excreted by cells. Acellular substances include (but are not limited to) viruses and other vectors for transmitting genetic material. *Ex vivo* manipulation includes propagation, expansion, selection, purification, pharmaceutical treatment, or alteration of the biological characteristics of these substances outside of a human body.

Id.

The "immunogen" of the *Classen* claim can be considered a "biological material" because immunogens commonly include "proteins and other molecules that are secreted or excreted by cells," which are mentioned in the Congressional Report. *Id.* Thus, the *Classen* claim can be considered a "biotechnology process." Because Congress, in enacting § 287(c), contemplated that such claims are patent eligible, and because *Bilski's* "machine-or-transformation" test excluded the *Classen* claim from patent eligibility, *Bilski* conflicts with the proper interpretation of the Patent Code as a whole.

C. Section 100(b) Of The Patent Code Defines As Patent Eligible Inventions That Are At Risk Of Exclusion By *Bilski's* "Machine-Or-Transformation" Test

The *Bilski* "machine-or-transformation" test also conflicts with § 100(b) of the Patent Code, which provides definitions for the Patent Code, including § 101. Section 100(b) reads: "The term 'process' means process, art, or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material." 35 U.S.C. § 100(b). Thus, patent-eligible subject matter under § 101 includes a new use of, for example, a composition, such as a drug. Many uses of compositions are not tied to a particular machine and might be considered not to involve a transformation to a new state or thing. For example, a known chemical compound may be discovered to be useful to treat a particular disease. This would be a "new use of a known ... composition of matter." *Id.* If the compound is administered using known and conventional techniques, this use arguably would not be tied to a "particular machine" and might be considered not to involve "a transformation to a new state or thing" as required under the *Bilski* "machine-or-transformation" test.[4] The result would be to exclude from patent eligibility an invention falling within the definition of "process" in § 100(b). Thus, it is clear that *Bilski's* rigid "machine-or-transformation" test excludes from patentability some processes plainly contemplated in § 100(b).

Indeed, the *Classen* claim could be considered a new use of a composition of matter. The immunogen in the *Classen* claim is a composition of matter, and the claim includes a method of using the immunogen—"immunizing mammals in the treatment group of mammals with one or more doses of one or more immunogens." U.S. Pat. No. 5,723,283, claim 1. Thus, the *Classen* claim falls within the definition of a patent-eligible process in § 100(b). However, the Federal Circuit has already applied the *Bilski* test to the *Classen* claim and held it not to be patent eligible. Because such a result conflicts with § 100(b) of the Patent Code, the rigid *Bilski* "machine-or-transformation" test, which has the effect of pitting one section of the Patent Code against another, is contrary to established tenets of statutory construction.

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[4] GaBio does not take a position for the purpose of this *amicus curiae* brief regarding whether a compound administered to a patient does or does not involve "a transformation to a new state or thing" so as to satisfy the *Bilski* "machine-or-transformation" test. Rather, GaBio points out the error and harm that result when no such transformation is found.

In short, *Bilski's* definition of "process" will exclude from patent eligibility many claims that are patent eligible according to settled expectations, and at worst will carve out entire areas of subject matter from patent eligibility because they do not transform an article. *See, e.g., Classen*, 304 Fed. Appx. at 866. *Bilski's* "machine-or-transformation" test is so broad that it undermines clear Congressional intent and proper statutory construction as to what "processes" are patent eligible under § 101.

Although Washington and Jefferson could not have envisioned such a method as the one in *Classen* when the first U.S. patent for a "process" of making potash (U.S. Patent X000001) was issued, GaBio submits that the Framers would have intended, and Congress has so determined, that Article I, section 8 of the Constitution covers this modern day process and many others like it. The conflict between the test articulated in *Bilski* and other sections of the Patent Code, as well as the violation of this Court's statutory construction precedent by the *Bilski* court, require that the Supreme Court reverse the Federal Circuit's decision in *Bilski* and its adoption of a mandatory "machine-or-transformation" test.

CONCLUSION

The Federal Circuit's "machine-or-transformation" test conflicts with this Court's precedent declining to adopt a rigid test for determining patent-eligible subject matter, as well as with the proper construction of federal law defining what is a patent-eligible process.

The Federal Circuit's test is formulated as a "gateway" test of what is patent eligible. This is contrary to this Court's precedent, which consistently seeks to determine if the invention at hand is *not* patent eligible, in keeping with this Court's limited exceptions to patent-eligible subject matter. Only if an invention is clearly not patent eligible under these limited exceptions has this Court excluded the invention from patent protection.

In addition, the Federal Circuit's mandatory test excludes from the definition of "process" in one section of the Patent Code—and thus excludes from patent protection—biotechnology and medical processes that are specifically contemplated as patent eligible in other sections of the Patent Code. This conflict between sections of the Patent Code is contrary to the rules of statutory construction.

Accordingly, the Court should reverse the Federal Circuit's improper adoption of the inappropriately narrow and rigid "machine-or-transformation" test.

Respectfully Submitted,

William H. Kitchens
Counsel of Record
Robert A. Hodges, PhD
David E. Huizenga, PhD
Scott E. Taylor
Heather Smith Michael
ARNALL GOLDEN GREGORY LLP
171 17th Street, NW
Suite 2100
Atlanta, Georgia 30363
(404) 873-8500

Counsel for Amicus Curiae
Georgia Biomedical Partnership, Inc
d/b/a Georgia Bio

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Supreme Court of the United States

BERNARD L. BILSKI and RAND A. WARSAW,
Petitioners,

v.

DAVID J. KAPPOS, Under Secretary of Commerce
for Intellectual Property and Director,
Patent and Trademark Office,
Respondent.

*On Writ of Certiorari to the United States
Court of Appeals for the Federal Circuit*

BRIEF OF PROFESSOR LEE A. HOLLAAR AND IEEE-USA AS *AMICI CURIAE* IN SUPPORT OF AFFIRMANCE

DAVID M. BENNION
Counsel of Record
MICHAEL R. MCCARTHY
PARSONS BEHLE & LATIMER
201 SOUTH MAIN STREET
SALT LAKE CITY, UT 84111
(801) 532-1234

Counsel for Amici Curiae

September 1, 2009

Becker Gallagher · Cincinnati, OH · Washington, D.C. · 800.890.5001

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Interest of the *Amici Curiae*[1]

Lee A. Hollaar, the author of this brief, is a professor of computer science in the School of Computing at the University of Utah. He teaches courses both in computer and intellectual property law and in computer systems and networking. He has been programming computers since 1964 and designing computer hardware since 1969. He received his B.S. degree in electrical engineering from the Illinois Institute of Technology in 1969 and his Ph.D. in computer science from the University of Illinois at Urbana-Champaign in 1975.

Professor Hollaar is an inventor and patentee of computer-related technology; a Registered Patent Agent involved with the prosecution of patent applications since 1989; an expert witness, consultant, and special master in patent litigation; the author of *Legal Protection of Digital Information* (BNA Books, 2002) and course material on computer-based patents; and a teacher of that material. He is concerned that the decision in this case will continue the unclear lines of what is statutory subject matter by making distinctions not tied to real technological differences or may force inventors of computer-program-based inventions to claim them in ways that obscure the patentable advance over the prior art.

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[1] In accordance with Supreme Court Rule 37.6, counsel listed on the cover states that this brief was authored by amicus curiae Professor Hollaar and reviewed by counsel, and that counsel to a party did not author this brief in whole or in part. No person other than the amici curiae and their counsel made a monetary contribution to the preparation or submission of this brief.

Petitioners and Respondent have consented to the filing of all amicus curiae briefs in support of either or neither party and their consents have been filed with the Court.

Dr. Hollaar is the former chair of IEEE-USA's Intellectual Property Committee, where he supervised the filing of the amicus brief whose theory of foreseeability was adopted by this Court in *Festo*,[2] and filed an amicus brief on his own behalf in *Grokster*[3] whose theory of inducement liability was also adopted by this Court.

IEEE-USA is an organizational unit of The Institute of Electrical and Electronics Engineers, Inc. (IEEE), a New York-based not-for-profit, which is the world's leading educational and scientific association for the advancement of technology. IEEE-USA supports the nation's prosperity and competitiveness by fostering technological innovation for the benefit of all, including the more than 210,000 engineers, scientists and allied professionals who are U.S. members of the IEEE.

As part of its mission, IEEE-USA seeks to ensure that U.S. patent and copyright law serves to promote the progress of science and the useful arts consistent with the principles set forth by our nation's founders. IEEE's U.S. members serve on the "front line" of the United States copyright and patent system. Our membership includes inventors and software authors who create and use cutting-edge technology, who research and publish professional articles and journals, and who develop published standards that form the bases for widely adopted and critical technologies. They are entrepreneurs and employees of firms that acquire, license, and market patented works.

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[2] *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722 (2002).

[3] *Metro-Goldwyn-Mayer Studios, Inc. v. Grokster, Ltd.*, 545 U.S. 913 (2005).

IEEE-USA recognizes that the promotion of progress requires a delicate balancing of these groups interests, and IEEE-USA consistently speaks for that balance. When a decision threatens to disrupt the nation's intellectual property system, IEEE-USA respectfully believes it has the experience and perspective to aid the court as it interprets the law to achieve the constitutional directive of promoting progress. It has done so previously with amicus filings in *Festo* and *Grokster*, suggesting the balanced approach ultimately adopted by this Court.

The Federal Circuit decision in this case, concerning the patenting of method claims, as well as subsequent decisions of the Board of Patent Appeals and Interferences and trial courts, threaten existing and future software patents, an area of law and technology important to IEEE's members.

Summary Of The Argument

This Court's trilogy of software patent cases,[4] and the lower court decisions trying to reconcile them, have led to over three decades of uncertainty. This Court should use this case to repudiate those unfortunate cases (and thereby the opinions below based on them) and go back to the original clear and simple test for determining when a process is statutory subject matter:

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[4] *Gottschalk v. Benson*, 409 U.S. 63 (1972), *Parker v. Flook*, 437 U.S. 584 (1978), and *Diamond v. Diehr*, 450 U.S. 175 (1982).

- *A process is patentable subject matter when it involves making or using a machine, manufacture, or composition of matter.*

Such a test is needed so examiner time can be spent more productively on the critical questions of novelty and nonobviousness and not trying to determine if a process is statutory.

The Federal Circuit's opinion in this case just creates new confusion over what it means to be "tied to a particular machine." Already, we are seeing collateral damage to software-based patents, with the Patent Office denying patents and district courts striking down granted patents.

Other proposed tests ("method of doing business," "abstract/applied," "practical application" or "useful, concrete and tangible," or "technological") portend more decades of uncertainty, as the Patent Office Board of Appeals and Interferences and the Federal Circuit try on a case-by-case basis to apply those terms to determine where the boundary really lies.

Judge Dyk's concurrence in this case provides an excellent discussion of how this test was the understanding at the time of the Patent Act of 1793, on which the current statutory language is based, of when a process is statutory subject matter. Although this test is over two centuries old, because the concepts of "machine, manufacture, or composition of matter" have evolved with technology, so has this test. It provides a good and clear line for even the most cutting-edge technology.

At the same time, this Court should take this opportunity to restate three principles related to that test:

- *Claims drawn to the other categories (machine, manufacture, or composition of matter) are always statutory subject matter.*
- *A claim that covers both statutory and non-statutory embodiments (under the broadest reasonable interpretation of the claim when read in light of the specification and in view of one skilled in the art) embraces subject matter that is not eligible for patent protection and therefore is directed to non-statutory subject matter.*
- *While using a machine may make a claim statutory, if the method itself is known in the prior art, simply adding a machine to perform the method does not necessarily make the claim nonobvious.*

Because the claims at issue in this case are not limited to using or making a machine, manufacture, or composition of matter, they are not statutory subject matter, and the decision below should be affirmed, but on the modified grounds stated above.

Argument

Section 101 of the Patent Act of 1952, 35 U.S.C. § 101, provides the initial coarse filters in determining whether something is patentable. First, any claims must recite statutory subject matter (a "process, machine, manufacture, or composition of matter, or any new and useful improvement thereof"[5]) and second, the invention must be "useful." It is only after those requirements are met that the novelty requirement of Section 102, 35 U.S.C. § 102, the non-obviousness requirement of Section 103, 35 U.S.C. § 103, and the enablement requirements of Section 112, 35 U.S.C. § 112, need be considered.[6]

Before the advent of computer technology, process claims in patents were used to claim a new way of making or using a known machine, manufacture, or composition of matter, the other classes of statutory subject matter. The first patent granted by the United States, in 1790, was for a new process for making potash. In *Cochran v. Deener*, this Court stated:

> That a process may be patentable, irrespective of the particular form of the instrumentalities used, cannot be disputed. * * * A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of

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[5] The brilliance of the original drafters of this provision is that they used general terms which have been able to evolve as technology has evolved, incorporating things that could not have been contemplated two centuries ago, and yet saying that not everything should be patentable. Only one word has been changed ("art" updated to the more common "process") since this provision was enacted in the Patent Act of 1793.

[6] A good summary of the steps that must be passed in order for a patent to be granted on an invention is given by Judge Giles Rich, one of the drafters of the Patent Act of 1952, in *In re Bergy*, 596 F.2d 952, 959-963 (CCPA 1979). The opinion goes on to note some confusion introduced by not tracking the statutory scheme in discussing the patentability of an invention.

acts, performed upon the subject matter to be transformed and reduced to a different state or thing. If new and useful, it is just as patentable as is a piece of machinery.[7]

A trilogy of confusing opinions leads to the question before this Court

The confusion over what is a statutory process began with this Court's decision in *Gottschalk v. Benson*,[8] finding unpatentable a method for "converting signals from binary coded decimal form into binary" claimed as a series of steps. Concluding that Congress should draw the patentability line with respect to software-based inventions,[9] this Court held that the claimed invention was unpatentable. But the opinion also stated "It is said that the decision precludes a patent for any program servicing a computer. We do not so hold."[10] So, it was left to future cases to determine when a computer program would be patentable.

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[7] 94 U.S. 780, 787-788 (1876), cited in *Diehr*, 450 U.S. at 182-183.

[8] 409 U.S. 63 (1972).

[9] Unfortunately, Congress ignored this Court's suggestion and has said essentially nothing about the patentability of software-based inventions. Congress did adopt a "prior user right" for "method[s] of doing or conducting business" in 1999, see 35 U.S.C. § 273 added by Public Law 106-113 § 1000(a)(9), 113 Stat. 1501A-555, but that appears to be a safe harbor for those who had felt that business methods were unpatentable and had kept their business method as a trade secret so that it was unavailable as prior art. The prior use defense of § 273 prevents a later-issued patent from stopping the continued use of their method. Contrary to petitioner's assertion in the questions presented, there is no indication that Congress ever intended this provision as a statement that business methods were statutory subject matter.

At the same time, this Court made it clear that the traditional limitation on patentable processes was not absolute, but didn't say where the line is.

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a "different state or thing."
>
> We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.[11]

The two follow-up cases that this Court decided on when a software-based invention was patentable did little to clarify the situation. In *Parker v. Flook*,[12] a claim whose "only novel feature ... is a mathematical formula" was held unpatentable, while three years later, *Diamond v. Diehr*[13] found a method that involved the repeated calculation of a known mathematical formula (the Arrhenius equation) patentable.

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[10] *Benson*, 409 U.S. at 71.

[11] *Benson*, 409 U.S. at 71.

[12] 437 U.S. 584 (1978).

[13] 450 U.S. 175 (1981).

Having no clear linchpin with which to determine when a software-based invention was patentable or not, the Federal Circuit and its predecessor court, the Court of Customs and Patent Appeals, tried to fashion tests for when a claimed software-based invention is statutory subject matter, as computer technology became more important and conventional machines using gears were replaced by embedded computers in devices such as gas pumps and washing machines.

One only has to look at the multitude of CCPA, Federal Circuit, Board of Patent Appeals and Interferences, and district court opinions, as well as law review articles and briefs in this case, all claiming to be following this Court's trilogy of opinions and yet getting dramatically different results (both Bilski and the Federal Circuit claim fidelity to those opinions), to see that those three opinions have produced nothing but confusion.

It is time for this Court to start with a clean slate and clearly draw the line when a process, especially one implemented using a computer or performing a business method, is statutory subject matter.

The need for a simple test for statutory subject matter

As mentioned previously, whether something is statutory subject matter is just the first of many filters used to determine whether something should be granted a patent. Because patents, unlike any other form of intellectual property protection, don't recognize independent creation as a defense, it is important that only claims that are novel and non-obvious be allowed.

A patent examiner has only a very limited time to determine whether a claim not only meets the threshold requirements of statutory subject matter and usefulness, but also the more substantive requirements of novelty and non-obviousness. Given the limited time an examiner has to process a patent application to either issuance of a patent or a final rejection – on the average, less than twenty hours – it is important that a determination of whether a claim is statutory subject matter be simple to make.[14]

What happened after the Diehr opinion shows how spending time on determining statutory subject matter leads to bad patents

The prosecution history of United States Patent 4,344,142, which is the patent that issued as a result of this Court's decision in *Diehr*, is instructive. Before the appeal, the examiner had rejected the claims only for statutory subject matter and enablement.[15] The examiner had not reviewed the application for novelty or nonobviousness and, in fact, Diehr's attorney tried to goad the examiner on the point by saying that the "applicants infer" that there were no issues in light of the prior art.

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[14] Applicants also need a predictable test for statutory subject matter. Since most patent applications are published after eighteen months, see 35 U.S.C. § 122(b), and in as little as six months if a provisional application had been filed, and because it now takes two years or more before an examiner first reviews an application, it is likely that an application will be published (and any chance for trade secret protection lost) before whether a claim's statutory subject matter validity will be assessed.

And since the nature of the claim will determine the form of the disclosure, which can't be changed without losing the application's priority date and possibly the right to any patent because of the application's publication, it is critical that an applicant know at the time of filing that a claim recites statutory subject matter.

[15] The examiner questioned whether undue experimentation would be necessary for a person with ordinary skills to program

Following this Court's decision on March 3, 1981, the application worked its way back to the examiner. On September 28, 1981, Diehr slightly amended the claims so that they better matched the way the courts had interpreted them.[16] On March 23, 1982, the examiner allowed the application as amended.

Rather than a normal office action where the examiner cites prior art and indicates that the claimed invention would be obvious in light of that prior art, the office action reads more like a response from an applicant. Two patents are cited as prior art, and the examiner then points out how each patent differs from the claimed invention. The examiner does not discuss why those differences would not be obvious,

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the computer to control "a plurality of rubber-molding presses simultaneously." The applicant eventually overcame that rejection by submitting affidavits regarding how it would be possible to write the program based on the specification.

[16] Of significance, "repetitively calculating in the computer, at frequent intervals during each cure, the Arrhenius equation" was changed to "repetitively performing in the computer, at frequent intervals during each cure, integrations to calculate from the series of temperature determinations the Arrhenius equation" and "indicates equivalence" was changed to "indicates completion of curing."

particularly in light of other prior art that may teach those differences.[17]

Since the patent is essentially on the implementation on a computer of a well-known equation first proposed in 1884, one would have expected at least some examination for obviousness by the examiner, but the record shows none. This is especially true after Diehr had submitted affidavits saying how straightforward the programming of a computer to implement the claimed method would be, even for controlling a number of molds simultaneously.

In reviewing other prosecution histories of early software-based patents,[18] when the examiner initially rejected the claims on the grounds that they didn't recite statutory subject matter, much of the prosecution of the application was spent finding claim language that would get around the examiner's initial statutory subject matter rejection. When such language was finally found (and it often was not substantially different in scope from the original claim language), the application was allowed with only the slightest consideration of prior art.

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[17] One difference was that Diehr explicitly claimed determining the temperature "at a location closely adjacent to the mold cavity" and the other difference was that Diehr performed a continuous comparison.

[18] On June 2, 1995, the United States Patent and Trademark Office proposed examiner guidelines for determining when a software-based invention was statutory subject matter, with final guidelines effective on February 28, 1996. In light of the guidelines, rejections based on lack of statutory subject matter substantially declined, both because applicants had a clear idea of how to claim their software-based inventions to meet the statutory subject requirement and because examiners had a clearly-stated test for determining statutory subject matter.

Whatever this Court says regarding when a claim written as a series of steps recites statutory subject matter, it is vitally important to the patent system that the test be clear and straightforward to apply. Otherwise, too much time will be spent on applying the test to the detriment of the more important determination of whether a claimed invention is really a non-obvious contribution deserving patent protection.

Where to draw the line

The Federal Circuit's method patentability case law, particularly regarding software-based inventions and business methods, has been confusing and controversial because the Federal Circuit has been bound by this Court's trilogy of software patent cases, which do not draw a clear patentability line for methods. Fortunately, this Court can start with a clean slate simply by overruling any aspect of the trilogy that is inconsistent with this case. Patent examiners and trial courts will no longer have to try to reconcile the irreconcilable, making distinctions that are not anchored in reality.

The Federal Circuit's opinion just creates new confusion, with software-based inventions as collateral damage

The Federal Circuit opinion in this case shows the confusion caused by this Court's software-patent trilogy. In trying to reconcile the language of those three opinions (and overruling its past opinions where it felt there was a departure from those three opinions), the Federal Circuit held that a method is statutory if "it is tied to a particular machine or apparatus, or transforms a particular article into a different state or thing,"[19] parroting *Benson*'s "Transformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines."[20]

What the Federal Circuit did in this case with regard to whether a software-based invention claimed as a method recites statutory subject matter is just kick the can down the road.

Is a general purpose digital computer a "particular machine or apparatus" or is something more required?[21] The Patent Office's Board of Patent Appeals and Interferences apparently thinks so. In an "informative opinion" last year, the Board found that a claimed method that is "not tied to 'a particular machine,' but rather is tied only to a general purpose computer" is not patentable. It is not clear what characteristics of a computer need to be specified to make it a "particular machine," especially "because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software."[22]

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[19] *In re Bilski*, 545 F.3d 943, 954 (Fed. Cir. 2008).

[20] *Benson*, 409 U.S. at 70.

[21] *Ex parte Langemyr*, Appeal 2008-1495 at 24, 89 USPQ2d 1988 (BPAI, 2008). Perhaps the Board held the way that it did in hopes that the applicant would appeal to the Federal Circuit and have that court say what it means by "a particular machine or apparatus."

And at least two district courts have invalidated patents whose claims were directed to a "computer aided method."[23] Tens-of-thousands of patents that claimed software-based inventions as methods are now open to question.

Is the requirement of a particular component necessary for performing the claimed method enough? The claim in *Benson*, found not to be statutory subject matter by this Court, is directed to a particular machine or apparatus – an electrical circuit that includes a "reentrant shift register."[24] Would it be

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[22] *In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994), citing *In re Freeman*, 573 F.2d 1237, 1247 n.11 (CCPA 1978); *In re Noll*, 545 F.2d 141, 148 (CCPA 1976); and *In re Prater*, 415 F.2d 1393, 1403 n.29 (CCPA 1969).

[23] *Cybersource v. Retail Decisions*, No. C 04-03268 MHP, 2009 U.S. Dist. LEXIS 26056 (N.D. Cal. Mar. 26, 2009) and *DealerTrack v. Huber*, No. CV 06-2335 AG, 2009 U.S. Dist. LEXIS 58125 (N.D. Cal. Jul. 7, 2009).

[24] A shift register is a hardware device that shifts all the bits stored in it one position, either left or right, depending on the type of shift register or the control signal to the shift register. A reentrant shift register takes the bit shifted out from the end of the shift register and stuffs it back in the other end.

At oral arguments, "the Patent Office Solicitor admitted that the reference to this piece of apparatus in the claim was, for him, its 'most embarrassing phrase.'" The CCPA noted that it was not only a phrase, but also a key part of a number of claim elements, indicating that claim 8 only claimed the technique in the context patentable under the Federal Circuit's opinion in this case because the method is tied to a particular machine or apparatus?

It is likely that unless this Court makes a clear and unambiguous statement regarding when a method is statutory subject matter, applicants (and their attorneys, who are often engineers just as creative as their clients) will continue to push the boundaries of patentability. Affirmation by this Court just means that Bilski has to figure out a different form for his claims, based on some other quote taken out of context in this or a subsequent opinion.

The proposed alternatives will lead to decades of litigation trying to determine where the line lies

A number of alternatives to the Federal Circuit's "transformation or machine" test have been proposed. Some have suggested that "methods of doing business" not be patentable, reversing *State Street Bank v. Signature Financial*,[25] ignoring that the test was "poorly defined, redundant, and unnecessary" in light of the other statutory tests.[26] Bilski and others instead propose that this Court restore their view of *State Street Bank* – that any process is patentable as long as it produces a "useful, concrete and tangible result,"

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of a particular machine or apparatus. *In re Benson*, 441 F.2d 682, 687 (CCPA 1971).

[25] 149 F.3d 1368 (Fed. Cir. 1998).

[26] *In re Schrader*, 22 F.3d 290, 298 (Fed. Cir. 1994, Newman, J. dissenting).

ignoring that that statement was in the context of a claimed machine. Still others propose that to be patentable something must make a "technological contribution." Judge Rader, in his dissent below, and others say that the test should be whether what is claimed is an "abstract idea."

Adoption of any of these approaches portends decades more litigation as applicants probe the boundaries of patentability and alleged-infringers try to invalidate issued patents. Much as the Federal Circuit, in the opinion below, simply replaced the question "what is a process" with the questions "what is a particular machine, and what does it mean to be tied to it," all of the tests mentioned above simply raise new definitional questions.

For example, those opposed to patents on software-based inventions (or an infringer faced with a software-based patent and no other defense) will argue that software is "abstract." Given the fact that many improvements to machines today are the result of the software on the embedded processor that controls the machine, an opinion holding software abstract would take a major area of innovation out of the patent system.

Software-based inventions need and deserve patent protection as processes

The use of computer technology has expanded well beyond the use of an expensive digital computer to control an industrial process when this Court last considered the patentability of software-based inventions more than a quarter-century ago to being seemingly omnipresent. Microwave ovens, washers and dryers, television sets and radios, thermostats, furnaces and boilers, sprinkler controllers, and clocks and watches are but a few of the appliances where an embedded computer has replaced mechanical timers, gears, and switches, resulting in more reliable products able to perform more functions at lower prices.

Many of the new capabilities for such appliances are the result of novel and nonobvious computer programs that control traditional machines in ways that cannot be realistically done using mechanical controls. Much as Diehr's invention sensed the actual tire mold temperature and determined what to do next, today's microwave ovens sense the temperature of meat being cooked and dryers sense the moisture content of the clothes.

But many innovations are not limited to a particular type of appliance, but are advances that can benefit a wide range of computer programs. Although a new way to convert BCD numbers to binary is not that important, a technique for sorting information much faster would be because sorting is a fundamental activity in database systems, word processors (to handle things like indexes), compilers, and many other types of computer programs.

But the method in *Benson* wasn't patentable *because* it had a wide range of possible uses.

> The mathematical formula involved here has no substantial practical application except in connection with a digital computer, which means that if the judgment below is affirmed, the patent would wholly pre-empt the

mathematical formula and in practical effect would be a patent on the algorithm itself."[27]

That is a particularly perverse observation with respect to patents, because it denies patent protection to new techniques that have many applications, while presumably allowing patents on techniques that have limited applicability.

One argument the opponents of patents for software-based inventions make is that software is mathematics, and mathematics is not patentable.[28] But that not only ignores how software-based inventions are generally claimed, but is bad computer science. Claims that include data structures in random-access memories, input devices such as keyboards or mice, screen display devices, or clocks and time-outs, common in software-based patents, are no longer equivalent to pure mathematics.

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[27] *Benson*, 409 U.S. at 71-72.

[28] *Benson*, 409 U.S. 63, (1972) is generally cited for the latter proposition. But in most instances, the correspondence between computer programs and mathematics is merely cosmetic. For example, the equation $E = MC^2$ expresses a relationship between energy and matter first noted by Einstein, while the computer program statement E = M * C ** 2 represents the calculation of M time C raised to the second power and then assigning the result to a storage location named E. It is unfortunate for purposes here that the early developers of programming language made their calculation-and-assignment statements look like mathematical equations so that they would seem familiar to scientists and engineers. But the common programming statement I = I + 1, which increments the value stored in location I, is essentially nonsense as a mathematical equation. Similarly, a computer program is a series of calculation-and-assignment statements that are processed sequentially, not a set of simultaneous mathematical equations that are solved for their variables.

Other protections, such as copyright or trade secret, are not sufficient and employing them will only result in distortions in their law

Although computer software can be protected by copyright, that is not sufficient since copyright protection does not "extend to any idea, procedure, process, system, [or] method of operation,"[29] the very innovation that patents are intended to protect. Instead, today it is essentially limited to protection against literal copying or taking advantage of source code from a former employer. But before patents on software-based inventions became common, courts were expanding the nonliteral scope of copyright to "structure, sequence, and organization" of computer programs,[30] giving patent-like protection without the benefit to the public of disclosure and claiming.

Since patents have become generally accepted for protecting innovative techniques in computer programs, copyright protection for computer programs has been scaled back by the courts so that it covers literal copying – buying a single copy of a commercial software product such as Microsoft Windows or Office and installing it on every machine a dealer sells – or when a former employee or other person with access to a program's source code copies not only the ideas in the program (which could be trade secret misappropriation if they are not patented) but also the way those ideas have been implemented ("expressed").

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[29] 17 U.S.C. § 102(b).

[30] *Whelan Associates Inc. v. Jaslow Dental Laboratory, Inc., et al*, 797 F.2d 1222 (3d Cir. 1986). This case essentially provided patent-like protection to software without the requirements of disclosure and clear claiming.

Any reduction in the availability of patent protection for software-based techniques would likely result in new distortions to copyright as it is pushed to protect ideas in addition to expression, much as it was in *Whelan*'s time.

And in many cases, a new technique is self-revealing, so that trade secret protection is not available.[31]

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[31] Many programmers forego trade secret protection for their source code by making it available under a "free" or "open-source" license. These licenses, which are backed by copyrights of the source code, often require anybody improving the program to make their modifications available under the same license. But that does not keep someone from taking any new ideas in the program and incorporating them in a program while keeping their source code as a trade secret, because copyright does not protect ideas.

Although most open-source programmers are opposed to software patents, this likely stems from a time when many of their programs were "clones" of existing proprietary programs (the original "free software" program was to be a reimplementation of the Unix operating system), and a patent could prevent such cloning.

In this respect, they are like developing countries, which downplay intellectual property protection until they start producing their own innovations, at which time copyrights and patents become more interesting. The United States did not protect the works of foreign authors until 1891, when protection of American authors' works in foreign countries became important.

The use of method claims for software-based inventions results in clearer claiming

The question is then how such software-based inventions should be claimed, particularly to meet the statutory requirement that:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.[32]

One way is as a machine or apparatus, which avoids the question of what processes are patentable.[33] This is what was done, for example, in the first claim of an early patent for a software-based invention:[34]

> 1. Apparatus for detecting matches between strings of information-representing signals comprising:
> [a] means for comparing each subunit of a first string to the first subunit of a second string;

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[32] 35 U.S.C. § 112, second paragraph.

[33] Unless the machine claims are somehow treated as process claims, as was done by the trial court in *State Street Bank* and recently in *Research Corporation Technologies v. Microsoft* (No. CV-01-658-TUC-RCJ, 2009 U.S. Dist. LEXIS 71883, D. Az, July 28, 2009). It might have been far better if the Federal Circuit had simply held that the trial court was wrong to treat as a process what was clearly claimed as a statutory machine.

[34] Kenneth L. Thompson, "Text Matching Algorithm," United States Patent 3,568,156, granted March 2, 1971, and assigned to Bell Telephone Laboratories. Ken Thompson is one of the principal creators of the Unix operating system.

> [b] means for recording the identification of that subunit of the second string which subunit follows each matched subunit of the first string;
> [c] means for comparing each identified subunit of the second string to the next succeeding subunit of the first string;
> [d] means for indicating a successful match when all subunits of the second string are compared; and
> [e] means for indicating an unsuccessful match when all subunits of the first string are compared.

Since the elements of the claimed apparatus are in means-plus-function form, we have to look to the specification to see what is really being claimed.[35] And what we find is two very different implementations of the claimed special-purpose machine – the first in conventional digital logic of the period (DEC "Flip Chip" modules) and the second as assembly-language program segments for the IBM 7094 computer.[36]

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[35] See 35 U.S.C. § 112, sixth paragraph:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

[36] Presumably it was claimed this way to make the examiner see statutory subject matter (at least the digital logic) and then leverage that into a patent on the software implementation, both through claim 1 and a corresponding method claim 2. This application was filed at the time that Bell Labs was trying to determine the patentability of computer-based inventions. Another application that they filed became the subject of

Such a claim is undesirable because it is not clear on its face what is covered by the patent. One has to read through the specification and guess what structure corresponds to each functional element[37] and what may be equivalent to the structure in the specification. The Federal Circuit, in *State Street Bank*, apparently felt that it was necessary to include its view of the means for implementing each claim element so that the claim could be understood.[38]

A recent book posits that a major problem with patents today is that it is difficult for people to determine what is covered by a patent, and this lack of

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Gottschalk v. Benson et al., 409 U.S. 63 (1972).

Similarly, when the invention of *State Street Bank* was claimed both as a method and a machine, the examiner rejected the method claims but allowed the corresponding machine claims. 149 F.3d at 1371.

[37] It is not necessary for the applicant to indicate the corresponding structure in the specification for a claim element to the examiner, and examiners seldom indicate what they considered the corresponding structure. The Board of Patent Appeals and Interferences does require that:

> every means plus function and step plus function as permitted by 35 U.S.C. 112, sixth paragraph, must be identified and the structure, material, or acts described in the specification as corresponding to each claimed function must be set forth with reference to the specification by page and line number, and to the drawing, if any, by reference characters.

37 C.F.R. § 41.37(c)(1)(v). Because of that, every appeal coming to this Court from the Board will have the corresponding structure identified. But that is not the case for patents that have not been appealed to the Board.

[38] 149 F.3d at 1371-1372.

a predictable property right produces uncertainty for developers and costly disputes that may outweigh the positive incentives of the patent system.[39] The authors' research found that only in some sectors of technology, such as the pharmaceutical industry, do patents act as advertised, with their benefits outweighing their costs, while for software, the lack of clear claiming has a definite negative effect.

Software-based inventions can be claimed in a more straightforward manner using method claims, where the elements of the claims are the steps of the method performed by the new software technique.[40] This way of claiming simplifies the examination of the application, because it concentrates on the new method that is the heart of the invention. Much innovation today is in the techniques implemented using a computer, such as a more sophisticated way of controlling energy usage by an appliance which could not be practically implemented using a mechanical controller.

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[39] James Bessen and Michael J. Meurer, *Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovation at Risk*, Princeton University Press, 2008, at 46-72 ("If You Can't Tell the Boundaries, Then It Ain't Property").

[40] Some people may try to justify such a claim by saying that the claimed method "transforms" a general-purpose computer into a "special-purpose" computer. But that ignores when the claimed method occurs, which is when the "transformed" computer performs all the steps of the method. A method claim for transforming the computer would have steps such as "loading the program implementing the method from a storage device into the instruction-storage memory of the computer, so that the instructions implementing the steps of the method can be executed." Such a method is clearly obvious in light of decades of loading program instructions to be executed into memory.

For example, the claim above rewritten as a method claim would be:

> The method of detecting matches between strings of electronically coded subunits comprising the steps of:
> [a] comparing each subunit of a first string to the first subunit of a second string;
> [b] recording the identification of that subunit of the second string following each matched subunit of the first string;
> [c] comparing each identified subunit of the second string to the next succeeding subunit of the first string;
> [d] indicating a successful match when all subunits of the second string are compared; and
> [e] indicating an unsuccessful match when all subunits of the first string are compared.[41]

Not only does the use of the process claim not require that the specification be consulted to find corresponding structure to determine the scope of the claim, but it is infringed not when some collection of parts capable of performing the claimed method happen to come together in one machine, perhaps from different programs, but when the new method is actually performed.[42]

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[41] This is, in fact, Claim 2 of the 3,568,156 patent, except that the steps of the method are numbered rather than using letters to correspond to the "means-for" elements of the apparatus claim.

It should not be surprising that it is convenient to claim the technique of a software-based invention using language that is similar to describing the steps a person would do to perform the technique. But that is not because it is practical for a person to actually perform the technique, but because of our tendency to anthropomorphize computers,[43] describing the things done by a computer as if it were being done by a person.

But a claim to a software-based invention will often contain language explicitly limiting it to a computer (often in the preamble) or implicitly because of the nature of claim elements. For example, in the claim immediately above, the preamble limits the claim to

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[42] For those wanting to catch people constructing the special-purpose computer created by the method, a dependent claim such as "A digital computer system programmed to perform the method of claim N" can be used. Similarly, an article of manufacture claim to catch those producing the disks used to distribute an implementation of the method, a claim like "A computer-readable medium storing a computer program implementing the method of claim N" can be used. With both, the examiner can concentrate on determining the novelty and nonobviousness of the claimed method, and then simply check to see that the dependent claims are in the proper form.

[43] Ironically, the term "computer" referred to a person who carried out calculations or computations, such as those employed by the military to calculate ballistics tables. As analog and digital computers took over these tasks, in the middle of the twentieth century, the term took on today's meaning of a device performing the computations.

"electronically coded subunits" and not strings of characters written on paper to be read by a person.

Claiming a software-based invention as a method is clearly not the type of clever claiming this Court warned about when it said:

> A competent draftsman could attach some form of post-solution activity to almost any mathematical formula; the Pythagorean Theorem would not have been patentable, or partially patentable, because a patent application contained a final step indicating that the formula, when solved, could be usefully applied to existing surveying techniques. The concept of patentable subject matter under §101 is not "like a nose of wax which may be turned and twisted in any direction * * *."[44]

Instead, claiming a software-based invention as a method makes it clear where the novelty of the invention rests, which in turn makes it easier for the examiner to assess whether the requirements of novelty and non-obviousness have been met.

Using a process claim rather than a machine claim,[45] coupled with the Federal Circuit's developing law on full-scope enablement,[46] applicants will specify in the claim the particular steps of their claimed method that creates the special-purpose computer, but not use language overly broad lest their patent be invalid for lack of enablement. Unlike claiming the invention as a machine using functional elements, there will be no need for a person wanting to know the scope of the claims to guess at what structure in the specification defines each claim element, how broadly that structure should be read, and what are its equivalents.

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[44] *Parker v. Flook*, 437 U.S. 584, 590 (1978).

[45] If it is desirable to also claim the software-based invention as a machine or apparatus for purposes of who infringes, that can easily be done with a dependent claim in the form of "A digital computer system programmed to perform the method of [the parent method claim]."

This Court should support the use of process claims for software-based inventions because they represent a way of more clearly claiming what would otherwise be statutory: the special-purpose machine programmed to perform the method.

A clear line: statutory methods make or use a machine, manufacture, or composition of matter

Judge Dyk's concurrence below notes that the original understanding at the time of the first patent statutes was that an "art" in the patent sense (changed to "process" by the Patent Act of 1952) involved "working or making of any manner of new manufacture," and that "manufacture" – something man-made – encompassed "machines" and "compositions of matter."[47]

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[46] See, for example, *Sitrick v. Dreamworks*, 516 F.3d 993 (Fed. Cir. 2008). It is far, far better for examiners to spend their limited time not only determining whether a claimed invention is really novel and non-obvious as well as making sure that the scope of the claim is commensurate with what has been disclosed, than to try to apply confusing and sometimes contradictory rules to determine whether a claim recites statutory subject matter.

This comes from the English Statute of Monopolies, which was the basis of United States patent law, and Congress explicitly recognized that limit on statutory subject matter by including similar categories in the early patent acts and carrying them over to the present statutes.[48]

Judge Dyk also notes that "methods of organizing human activities" were never considered patentable at the time the patent statutes were written, even though they clearly existed at that time.[49]

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[47] *In re Nuijten*, 515 F.3d 1361 (Fed. Cir. 2008, *cert. denied*), held that even though signals are in a sense "man-made," they are not "manufactures" as that term is used in Section 101. 515 F.3d at 1356-1357.

[48] The first book published in the United States on patent law notes that the language of the Statute of Monopolies and the Patent Act of 1793 are "co-extensive" and "British authorities, therefore, so far as circumstances are similar, and the reasons for the cases remains the same, will be pertinent for determining what kinds of new invented things may be the legal subjects of patent monopolies." Thomas G. Fessenden, *An Essay on the Law of Patents for New Inventions* (1810), at 59. (Available at http://www.ipmall.info/hosted_resources/ip_antique_library/Patent/Fessenden_1810.pdf)

[49] It is possible that some patents have been granted for processes that seem not to meet this test, but in some instances that may be because one is looking at the title of the patent and not what was actually claimed. In other instances, the patent may have been granted without full consideration of the rule.

Updating the Statute of Monopolies' formulation to use current terms from the patent statutes, we get a clear statement of when a process is patentable: *A process is patentable subject matter when it involves making or using a machine, manufacture, or composition of matter.*

Although this test is over two centuries old, because the understanding "machine, manufacture, or composition of matter" has evolved with technology, so has this test. It provides a good and clear line for even the most cutting-edge technology.

With respect to "using," that means that at least one step of the claimed process is performed by a specified machine or the person performing the method uses a specified machine, manufacture, or composition of matter in order to perform at least one step of the claimed process.

Software-based inventions would be statutory under this test as a method if they are claimed as running on a digital computer, which would clearly be "using a machine." The method claims would not be for "making a machine," since as noted previously, such a claim would have steps such as "loading the program implementing the method from a storage device into the instruction-storage memory of the computer, so that the instructions implementing the steps of the method can be executed," and would most likely be obvious in light of past techniques for loading programs into a digital computer to be run.

As noted above, sometimes courts have applied the rule for whether a process is patentable to machines, manufactures, and compositions of matter. It is worth restating the rule that: *Claims drawn to the other categories (machine, manufacture, or composition of matter) are always statutory subject matter.* Machines, manufactures, and compositions of matter are all concrete things. They will never be "laws of nature, physical phenomena and abstract ideas,"[50] the exceptions to statutory subject matter.

There is another rule that needs restating: *A claim that covers both statutory and non-statutory embodiments (under the broadest reasonable interpretation of the claim when read in light of the specification and in view of one skilled in the art) embraces subject matter that is not eligible for patent protection and therefore is directed to non-statutory subject matter.*[51]

This means that in the broadest reading of the claim,[52] it must involve making or using a machine, manufacture, or composition of matter. As an example, consider the two claims in *Benson*.[53] Claim 8 was:

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[50] *Diehr*, 450 U.S. at 185.

[51] United States Patent and Trademark Office, "Interim Examination Instructions for Evaluating Subject Matter Eligibility Under 35 U.S.C. § 101," August 2009.

[52] "[A]s an initial matter, the PTO applies to the verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant's specification." *In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997).

[53] See 409 U.S. at 73-74.

> The method of converting signals from binary coded decimal form into binary which comprises the steps of –
> (1) storing the binary coded decimal signals in a reentrant shift register,
> (2) shifting the signals to the right by at least three places, until there is a binary '1' in the second position of said register,
> (3) masking out said binary '1' in said second position of said register,
> (4) adding a binary '1' to the first position of said register,
> (5) shifting the signals to the left by two positions,
> (6) adding a '1' to said first position, and
> (7) shifting the signals to the right by at least three positions in preparation for a succeeding binary '1' in the second position of said register.

Because the claimed process uses a machine or manufacture (the "reentrant shift register"), the claim is statutory. In this respect, the opinion of this Court in this case would overrule *Benson*. In contrast, Claim 13 was:

> A data processing method for converting binary coded decimal number representations into binary number representations comprising the steps of –
> (1) testing each binary digit position *i*, beginning with the least significant binary digit position, of the most significant decimal digit representation for a binary '0' or a binary '1';
> (2) if a binary '0' is detected, repeating step (1) for the next least significant binary digit position of said most significant decimal digit representation;

> (3) if a binary '1' is detected, adding a binary '1'at the (i+1)th and (i+3)th least significant binary digit positions of the next lesser significant decimal digit representation, and repeating step (1) for the next least significant binary digit position of said most significant decimal digit representation;
> (4) upon exhausting the binary digit positions of said most significant decimal digit representation, repeating steps (1) through (3) for the next lesser significant decimal digit representation as modified by the previous execution of steps (1) through (3); and
> (5) repeating steps (1) through (4) until the second least significant decimal digit representation has been so processed.

Because the claim is not limited to the making or using of a machine or manufacture, and instead can be performed by a person, it would not be statutory. Similarly, the claim in this case would not be statutory because it is not limited to the making or using of a machine, manufacture, or composition of matter.

This new test could be satisfied by an applicant by simply reciting in the claim's preamble that the method operates on, or uses, a digital computer system. But another principle should be make clear: *While using a machine may make a claim statutory, if the method itself is known in the prior art, simply adding a machine to perform the method does not necessarily make the claim nonobvious.*[54]

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[54] See 35 U.S.C. § 103.

Even if the claim does not explicitly recite a machine, it may be statutory if it recites elements that require a machine. So, for example, limiting a claimed method to a "relational database management system" would also make it statutory, since such a method can only be performed on a machine with such software.[55]

The claims in *Diehr* would be statutory subject matter, but whether they are patentable would depend on whether their method was nonobvious in light of its use of a well-known equation. Novelty, nonobviousness, and enablement should be the primary tests for patentability, not some long debate with the examiner and the courts over whether the claim recites a "particular" machine after which the examiner "throws in the towel" and grants the patent.

Conclusion

There is no indication that Congress intended that anything that can be described as a series of steps should be entitled to patent protection. Yet for software-based inventions, claiming by describing the particular steps of a method provides the clearest notice of what the inventor regards as his invention.

The question is where to draw the line. It is important that such a line be drawn to correspond with reality, or problems will result in applying the test. If the test for a statutory process is simply that it produces a "useful, concrete, and tangible result," it would open the floodgates to patents on just about anything done by man. Tests like the Federal Circuit's "transformation or machine," or whether the process is "abstract" or "technological" or a "business method" would mean years and years of litigation to determine where those vague terms actually draw the line.

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[55] In *Ex parte Koo and Leung*, Appeal 2008-1344 (BPAI, November 26, 2008), the Board found that such a claim was *not* statutory because the system of the claim "could be a software system" and not a particular machine as the Federal Circuit required in its opinion in this case. That simply underscores the problem with the Federal Circuit's test, because of course a "software system" will perform the steps of the method only when run on a machine.

Instead, the test should be the one that has existed from the start of patent law, updated to use today's statutory terms: ***A process is statutory subject matter when it involves making or using a machine, manufacture, or composition of matter***.

Respectfully submitted,

David M. Bennion
Counsel of Record
Michael R. McCarthy
Parsons Behle & Latimer
201 South Main Street
Salt Lake City, UT 84111
(801) 532-1234

Counsel for Amici Curiae
Professor Lee A. Hollaar
and IEEE-USA

AMICUS CURIAE BRIEF

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IN THE

Supreme Court of the United States

BERNARD L. BILSKI and RAND A. WARSAW,
Petitioners,

v.

JOHN DOLL, Acting Under Secretary of Commerce
for Intellectual Property and Acting Director,
Patent and Trademark Office,
Respondent.

**ON WRIT OF CERTIORARI TO THE
UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT**

BRIEF OF *AMICUS CURIAE* THE HOUSTON INTELLECTUAL PROPERTY LAW ASSOCIATION IN SUPPORT OF PETITIONERS

STEPHEN KOCH
President
HOWARD SPEIGHT*
HOUSTON INTELLECTUAL
PROPERTY LAW ASSOCIATION
9601 Katy Freeway
Suite 280
Houston, TX, 77024

* *Counsel of Record* *Counsel for Amicus Curiae*

224409

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INTERESTS OF THE AMICUS CURIAE

The Houston Intellectual Property Law Association (HIPLA) is an association of over 400 lawyers and other professionals who work in the Houston, Texas area.[1] Founded in 1961, HIPLA is one of the largest associations of intellectual property practitioners in the country. No HIPLA member has served as record counsel to any party in the subject of this appeal.

The practice of most of the HIPLA membership relates in substantial part to the field of intellectual property law, and HIPLA members are often called upon to advise their clients in matters involving the statute at issue in this case, 35 U.S.C. § 101. Members of HIPLA advise clients from all over the United States and the world, most of whom routinely file patent applications in the United States. Each of those patent applications is subjected to scrutiny by the United States Patent and Trademark Office under the statute. Once their patents are allowed, HIPLA members' clients rely on the validity of those patents, which is subject to review under the statute. As such, section 101 is a statutory provision of great consequence to many clients of HIPLA members.

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[1] No counsel for a party authored this brief in whole or in part, and no such counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than the *amicus curiae*, or its members or counsel made a monetary contribution to its preparation or submission. The parties have consented to the filing of this brief.

Many HIPLA members' clients file patent applications directed to software and business methods. Even companies that appear to be traditional brick–and–mortar enterprises, such as the energy companies, have developed large portfolios of software and business methods patents and patent applications. Software and business methods patents and patent applications are among the patent properties adversely affected by the decision under appeal here.

Because the Federal Circuit has improperly narrowed the scope of the statute as it applies to processes from that established by this Court in *Diamond v. Diehr*, this Amicus respectfully requests this Court to reverse such holding. *Diamond v.* Diehr, 450 U.S. 175 (1972). Because the Federal Circuit has improperly established the "machine–or–transformation" test for patent eligibility, this Amicus respectfully requests this Court to reverse such holding.The United States Patent and Trademark Office (hereinafter the "USPTO") rejected the claims of the instant patent application under 35 U.S.C. § 101. The Court of Appeals for the Federal Circuit (hereinafter the "Federal Circuit") affirmed the rejection. *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008), *cert. granted* 129 S. Ct. 2735 (U.S. 2009) . In its decision, the Federal Circuit adopted the machine–or–transformation test as the sole test governing section 101 analysis for process patents.

SUMMARY OF THE ARGUMENT

The Patent System is very important to the economy of the United States. It provides the context for much of the wealth owned by companies and for employment in the United States and around the world. Further, owners use their intellectual property not merely to protect the benefits of their substantial research and development investments from exploitation by both domestic and foreign enterprises, but also to generate licensing revenue and as leverage in collaborative agreements. All of those uses rely on a stable Patent System.

The Federal Circuit's *Bilski* opinion disrupts that stability. One example of that disruption is that the Board of Patent Appeals and Interferences now generally applies the *Bilski* opinion in such a way that claims to software, standing alone, and transformation of data, standing alone, are not patentable subject matter. A second example is that applying the Federal Circuit's machine–or–transformation test to important patents which have issued in recent years might have invalidated those patents, which would have been detrimental to the United States economy. Others will argue that the Federal Circuit's *Bilski* opinion is inconsistent with this Court's precedent. We will focus on the disruptions to the stability of the Patent System caused by those inconsistencies.

This Court should reject the machine–or–transformation test.

ARGUMENT

A. The Federal Circuit's Adoption of the "Machine–or–Transformation" Formula as the "Only Applicable Test" to Determine Patent Eligibility for a Process Threatens to Stifle Innovation, a Key Driver of the Nation's Economy

1. The Patent System is a Key Driver of the United States Economy and Should Adapt to Changing Times

The United States economy has undergone an enormous change in the last few decades. We have moved from a brick–and–mortar economy to one that relies on such technologies as the Internet, e–commerce, and cellular telephones. Technological revolutions are not uncommon in United States history and often induce discussions about patent quality:

> [W]henever the United States has undergone a major industrial renaissance – such as occurred during the nineteenth century when first steam and then later the telegraph, telephone, and electric power industries emerged[2] – the number of new patents [has] skyrocketed, as have concerns about a resulting decline in patent quality and an increase in patent litigation. So in 1836, and

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[2] *See also* Kevin G. Rivette & David Kline, Rembrandts in the Attic 15 (Harvard Bus. Sch. Press 2000). Figure 1–2 shows several other industrial evolutions, including Auto and Air in the early 20th century, Synthetics and Aerospace in the 1960s and 1970s and the current High Tech revolution.

> again in 1870, Congress reformed the patent system to better enable it to meet the demands of new technologies and new industries. MARSHALL PHELPS & DAVID KLINE, BURNING THE SHIPS, INTELLECTUAL PROPERTY AND THE TRANSFORMATION OF MICROSOFT, 161 (John Wiley & Sons 2009).

Indeed, the Congress is considering, as it did in its last session, sweeping revisions to the Patent Statute. 35 U.S.C. § 101, *et seq.*

Such changes are to be expected and are healthy. Patent law, as an enabler of innovation, must keep up with the times and changes to technology. Changes to patent law should be made carefully, though, and should be made in the context of the long history of the Patent Statute and be sensitive to the fact that current owners of patent properties, such as patents, patent applications, and licenses to patents or patent applications, have relied on the current state of the law in acquiring and applying such assets.

For example, patent holders have gone beyond using patent properties in the traditional negative sense, i.e., preventing others from making, using, selling, offering to sell, or importing the patented invention. Patents are also used to generate licensing revenue for their owners in return for the right to practice the patented invention. *See* Ronald A. Katz, *Secrets of the Trade: An Inventor Shares His Licensing Know–How, in* MAKING INNOVATION PAY: PEOPLE WHO TURN IP INTO SHAREHOLDER VALUE 177, 182 (Bruce Berman, ed. 2006) (describing a "business model" for licensing patents).

Further, some patent property holders have realized that "IP's greatest value [lies] not so much in being a weapon *against* competitors, but rather in serving as a *bridge to collaboration* with other firms that would enable companies to acquire technologies and competencies they needed to compete successfully." PHELPS & KLINE, *supra*, at 5 (emphasis in original). For Microsoft Corporation, one of the America's leading technology companies, "these IP–enabled collaborations have led to greater success . . . in the marketplace, materially enhanced the company's bottom line, and advanced the interests of [its] shareholders." *Id.* at 142.

These strategies rely on a stable Patent System and anything other than carefully measured changes could disrupt the entire structure. *See Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 739 (2002) ("courts must be cautious before adopting changes that disrupt the settled expectations of the inventing community"). It is difficult, for example, to seek enforcement of one's patent rights, attempt to license a patent, or work out a collaborative agreement when the patent property bases of such efforts suddenly become invalid. But that is exactly the cloud that the Federal Circuit's decision has caste. The next section of this brief provides some examples, illustrative of the decision's broad negative impact on the patent system.

This is not an abstract problem without economic implications. According to one commentator:

> intellectual property has now become the chief source of wealth of the modern corporation. IP and other intangible assets today account

> for upwards of 80 percent of the market capitalization of all public companies in the world—with brands, copyrights, patents and technological know–how now comprising the lion's share of these intangibles. PHELPS & KLINE, *supra*, at 137.

One important set of intellectual property rights that is directly threatened by the Federal Circuit's *Bilski* decision is software. "Intellectual property rights in software are now essential to the jobs and living standards of tens of millions of people the world over. Of the 1.2 trillion dollars spent worldwide on information technology this year, 21 percent of that will go towards software. Yet that 21 percent produces more than half of the 35 million jobs worldwide in the information technology sector." PHELPS & KLINE, *supra*, at 163.

The Federal Circuit's decision to adopt the machine–or–transformation test as the only test for patentable subject matter is a drastic, unjustified, and improvident change of direction for patent law. It should be rejected.

2. The "Machine–or–Transformation" Formula Threatens the vitality of many Software Patents

In the decision under appeal, the Federal Circuit observed that "a claim is not a patent–eligible 'process' if it claims 'laws of nature, natural phenomena, [or] abstract ideas.'" *In re Bilski*, 545 F.3d at 952, *quoting Diamond v. Diehr*, 450 U.S. 175, 185 (1972)). The Federal Circuit further observed this Court's distinction "between those claims that 'seek to pre–empt the use of' a fundamental principle, on the one hand, and claims that seek only to foreclose others from using a particular '*application*' of that fundamental principle, on the other." *Id.* at 953, (*quoting Diehr*, 450 U.S. at 187). The Federal Circuit then adopted the "machine–or–transformation" formulation as the governing test for determining if a claimed process is "tailored narrowly enough to encompass only a particular application of a fundamental principle rather than to pre–empt the principle itself," i.e., whether a process is patent–eligible under 35 U.S.C. § 101. *Id.* at 954, 956. The Federal Circuit's formulation of that test is: "A claimed process is surely patent–eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing." *Id.* at 954. The Federal Circuit determined that the "machine–or–transformation" is to be the "sole test governing § 101 analysis." *Id.* at 955–956.

Thus, rather than adopting the test annunciated under *Diehr* that a process is patent–eligible if it is tailored narrowly enough to encompass a particular application of a fundamental principle, rather than the principle itself, and rather than adopting the machine–or–transformation test as one test for patent eligibility, the Federal Circuit adopted its new machine–or–transformation test as the *only* test.

One quasi–judicial body charged with applying the Federal Circuit's machine–or–transformation test is the Board of Patent Appeals and Interferences (hereinafter "BPAI") within the United States Patent and Trademark Office (hereinafter "USPTO"). The BPAI's implementation of the machine–or–transformation test since the Federal Circuit's *Bilski* decision has been, in the words of one commentator, a "mess." *See* Peter Zura, *Bilski at the BPAI–What a Mess (Part 1)*, The 271 Patent Blog, *http://271patent.blogspot.com/2009/06/bilski-at-bpai-what-mess-part-1.html* (last visited July 8, 2009). As of June 16, 2009, "section 101 rejections [had] a 92% rate of being at least partly affirmed at the BPAI in 2009." *Id.* All "of the BPAI's cases in 2009 dealt with business methods and algorithmic processes. The 92% rate is remarkable, given the fact that, as recently as 2005, the BPAI *did not uphold a single rejection based on patentable subject matter.*" *Id.* (emphasis in original). Thus, the Federal Circuit's decision in this case has fundamentally changed section 101 law, at least as it respects business methods and algorithmic processes.

a. The BPAI has applied the Federal Circuit's *Bilski* opinion as a broad exclusion over software.

The BPAI analysis of patentability of a process under the Federal Circuit's *Bilski* decision is an exercise in formalistic reasoning. The BPAI typically does not deal with the questions of whether or not the claim covers a law of nature or natural phenomenon and whether or not the claimed subject matter sets out "'[a] procedure . . . [a] series of actions, motions, or operations definitely conducing to an end, whether voluntary or involuntary.'" *In re Bilski*, 535 F.3d at 952 (definition of "process"). Those questions are most likely answerable upon a quick inspection of the claim. Instead, the BPAI moves directly to the question of whether the claimed subject matter is unpatentably abstract. In some cases, the BPAI considers the abstraction question as one of whether or not the claim pre–empts the use of a fundamental principle. *See, e.g.*, *Ex Parte Barnes*, 2009 WL 164074 at *6 (BPAI January 22, 2009)("A claim that is drawn only to the analyzing of data . . . is a claim that seeks to pre–empt the use of a fundamental principle"). In other cases, the BPAI decides the abstraction issue using the machine–or–transformation test. *See, e.g.*, *Ex Parte Hardwick*, 2009 WL 1796055 at *4–5 (BPAI June 22, 2009)(invention "not tied to a particular machine" and does not transform an article).

The BPAI appears to have arrived at some general rules:

1. It has been found that software, such as a data processing program, standing alone, does not satisfy the machine element of the machine–or–transformation test. *See, e.g.*, *Ex Parte Petculescu*, 2009 WL 1718896 at * 8 (BPAI June 4, 2009) ("Software in itself, with no structural tie to an article of manufacture, machine, process or composition of matter, is not patentable subject matter" (citing *In re Nuijten*, 500 F.3d 1346, 1357 (Fed. Cir. 2007)); *Ex Parte Mau*, 2009 WL 1182161 at *11 (BPAI May 1, 2009) ("[c]omputer programs and data structures are not physical machines").

2. It has been found that a claim that recites an otherwise unpatentable method does not become patent eligible simply because the claim recites the method being run on a general purpose computer. *See, e.g.*, *Ex Parte Avinash*, 2009 WL 1714570 at *9, *11 (BPAI June 2, 2009) ("Even assuming that the claimed temporal processing unit introduces structure into claim 1, we still find that the claim recites no more than a general–

purpose controller or computer (FF 14) that preempts substantially all practical applications;" "a general purpose computing system does not tie claim 10 to a special purpose or *particular* machine" (emphasis in original)).

3. It has been found that transforming data does not satisfy the transformation test, *See e.g.*, *Ex Parte Verhaegh*, 2009 WL 1719535 at * 14 (BPAI June 11, 2009) ("The steps of process claims 1–5 also failed the second prong of the machine–or–transformation test because the data process in the claims do not represent physical and tangible objects"); *Ex Parte Patculescu*, *supra*, at *7 (the "purported transformation of data without a machine, is insufficient to establish patent–eligibility under § 101" (citing *In re Bilski*, 545 F.3d at 961)); *Ex Parte Busche*, 2009 WL 1707168 at *10 (BPAI May 28, 2009) ("the data represents information about a generic training and testing data set, which are intangible data;" the data is not transformed), unless the (a) data clearly representing physical and tangible objects, such as bones, organs, and other body tissue; and (b) the transformation of raw data into a particular visual depiction of a physical object on a display (i.e., the Adele exception). *See, e.g.*, *Ex Parte Avinash*, *supra* at *12; Ex Parte Caputo, 2009 WL 1747508 at *3 (BPAI June 18, 2009)("'So long as the claimed process is limited to a practical application of a fundamental principle to transform specific data, and the claim is limited to a visual depiction that represents physical objects or substances, there is no danger that the scope of the claim would wholly pre–empt all uses of the principle'" (*quoting In re Bilski*, 545 F.3d at 962).

4. It has been found that reciting a computer in the preamble of a claim is usually found to be merely an exercise in claim drafting, *see*, *e.g.*, *Ex Parte Greene*, 2009 WL 1134839 at *7 (BPAI April 24, 2009) ("merely adding a nominal recitation of conventional computer hardware in a claim otherwise directed to a pure mathematical algorithm is merely an exercise in claim drafting that cannot, by itself, render the claim statutory"), or merely a field of use recitation and insufficient to transform an otherwise unpatentable method claim into patentable subject matter. *See*, *e.g.*, *Ex Parte Dang*, 2009 WL 1892586 at *4 (BPAI June 29, 2009) ("although the claim preamble recites the method as being computer implemented, we consider it to be merely a field of use recitation . . . [s]ince the reference to a computer is not again mentioned in the claim, we find that claim 1 fails to be tied to a particular machine or apparatus" and thus non–patent eligible subject matter).

5. On the other hand, it has been found that the recitation of a computer in the preamble and later in the body of the claim does recite patentable subject matter. *See*, *e.g.*, *Ex Parte Altman*, 2009 WL 1709111 at *6 (BPAI May 29, 2009) (preamble recites host multiprocessor system's operating system and claim body recites "a local lookaside table that *receives* a target virtual memory address and *outputs* a host memory address and page access rights" indicating that "execution by a machine is required" and the claim recites patentable subject matter (emphasis in original)).

6. Finally, it has been found that recitation of elements in the means–plus–function format satisfies

the machine prong of the machine–or–transformation test. *See, e.g.*, *Ex Parte Verhaegh, supra*, at *7 (elements in means plus function format are presumed to require construction under 35 U.S.C. § 112 implying that the claim is directed to a machine).

These examples, taken either individually or as a whole, provide clear evidence of the problems with the rigid *Bilski* machine–or–transformation test. The machine prong of that test is implicitly at odds with language this Court quoted in *Diehr*, i.e., that "the tools to be used . . . . may be of secondary consequence." *Diehr*, 450 U.S. at 183-84 (quoting *Cochrane v. Deener*, 94 U.S. 780, 787–788 (1877)). The Bilski test on the contrary raises the "tool" to having primary significance.

The transformation component of that test is equally at odds with this Court's precedent. Although this court has frequently used the phrase "transformation and reduction of an article" in its opinions, the focus has always been on the fact that "[t]he process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence." *Id.* at 183 (quoting *Cochrane*, 94 U.S. at 780, 787; and that "Transformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines, *Id.* The Bilski focus on the article changes the focus from the nature of the process – to do something in a certain order – to a focus on the object of the process. That is a more limiting standard than either the Patent Statute or this Court's precedent requires and should be overruled.

As the above BPAI examples indicate, the Federal Circuit's *Bilski* decision has resulted in a significantly different outcome for recently filed patent applications than would have been expected heretofore. As the examples below further indicate, the decision also raises questions regarding the state of long issued patents on which a significant portion of the economy relies.

b. The machine–or–transformation test's negative impact on important patents.

As discussed above, intellectual property rights are vitally importantly throughout the world and particularly in the United States. The change to the law brought about by the Federal Circuit's *Bilski* opinion might be argued to be a vehicle to invalidate some of those important patents. Several examples follow.

i. Dell Computer Corporation's "build–to–order" patents.

In the late 1990's Dell Computer Corporation soared to the top of the personal computer business. RIVETTE & KLINE, *supra* n.2, at 34. The key to Dell's success was:

> a unique 'build–to–order' direct sales model that enables buyers to order a custom–configured PC via the Internet or an 800 number. These orders are then processed through continuous–flow manufacturing, configuration, and customer service operation for delivery to home or office within 72 hours.

Id. at 34–35.

Dell patented some of those processes. A Westlaw search of issued patents with Dell as the assignee and "build-to-order" as a search term results in approximately 160 hits. Dell did not just sit on its patents. Instead:

> [i]n the spring of 1999, the company cross-licensed its patents to IBM in a $16 billion deal that enabled each to plug key holes in their respective businesses. Dell gained access to IBM's patented PC components, and IBM obtained access to Dell's patented systems for running a successful build-to-order direct sales effort. *Id.* at 36.

This is an example of the collaborative use of a patent portfolio that was discussed above. Arguably, the agreement would not have been possible without Dell's patenting of its build-to-order manufacturing system.

One patent that may have been included in Dell's cross-license with IBM was U.S. Patent No. 5,963,743, entitled Database for Facilitating Software Installation and Testing for a Build-to-Order Computer System, which issued on October 5, 1999. U.S. Patent No. 5,963,743 (issued Oct. 5, 1999) ("'743 Patent"). The '743 Patent is directed to "an improved method for installing software and testing computer systems before they are shipped to customers." '743 Patent at column 2, lines 30–32.

Claim 1 of the '743 Patent is repeated below:

> 1. A database for use by a system database in the manufacturing of a build-to-order computer system comprising: a step table containing a set of software installation and testing steps shared among different components of substantially all computer systems being manufactured, wherein a prescribed software installation or testing step is executed by the system database during the manufacturing of the build-to-order computer system to facilitate a corresponding software installation or testing for the build-to-order computer system, the step table including an aftercode attribute identifying whether a halt or reboot is required after a corresponding step is executed; and a component table coupled to the step table, the component table containing a set of substantially all possible components that are included within the computer systems being manufactured, wherein the prescribed software installation or testing step executed by the system database is determined in accordance with a corresponding component included in the build-to-order computer system.

Claim 1 recites a step table and a component table. The step table contains the software installation and testing steps necessary to manufacture a build-to-order computer. The component table contains a set of all of the possible components that might be used in the manufacture of the build-to-order computer. The claim does not describe any particular machine and the databases it recites appear to be intended to reside on a general purpose computer. It could be argued that claim 1 does not describe any action whatsoever and, in particular, does not describe a "transformation."

Therefore, if faced with determining whether claim 1 of the '743 Patent recites patentable subject matter, the BPAI might today determine that it does not. The BPAI might reason that the claim is to a "general purpose computer that has been programmed in an unspecified manner to implement the functional steps recited" in the claim, *Ex Parte Cornea–Hasegan*, 2009 WL 86725 at *4 (BPAI January 13, 2009), and thus that it does not satisfy the "machine" prong of the machine–or–transformation test. Similarly, the BPAI might today find that claim 1 does not satisfy the transformation prong because the claim describes no action at all.

Thus, had the Federal Circuit's *Bilski* decision been in place when Dell was prosecuting the '743 Patent in the USPTO, the '743 Patent might not have issued, or at least not in its current form. Dell might have been deprived of a major component of its deal with IBM, the deal might not have happened, and both Dell and IBM would have been the poorer for it.

ii. AT&T's linear programming patent.

U.S. Patent No. 4,744,028, entitled Methods and Apparatus for Efficient Resource Allocation, U.S. Patent No. 4,744,028 (issued May 10, 1988) ("'028 Patent"), is sometimes cited, by even those that are hostile to software patents, "as an example of what a software patent should be: a highly specific, nontrivial contribution to practical knowledge." JAMES BESSEN & MICHAEL MEURER, PATENT FAILURE, HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK, 202 (Princeton Univ. Press 2008). It is directed to optimizing resource allocations, particularly among telecommunications transmission facilities.

AT&T obtained a patent on the algorithm in 1988 and "developed a product (KORBX), bundling the software with a high-performance computer. Although AT&T did make a small number of sales and also apparently licensed the patent, this effort was not a significant commercial success." *Id.*

Claim 1 of the '028 Patent is repeated below:

> 1. A method for allocating the available telecommunication transmission facilities among the subscribers demanding service at a particular time so as to reduce the total cost of operating said transmission facilities, where the available transmission facilities, the subscribers, and the total cost are related in a linear manner, said method comprising the steps of:
>
> tentatively and iteratively reassigning said available telecommunications transmission facilities to said subscribers so as to reduce said total costs at each said reassignment,

> each said reassignment being determined by normalizing the previous assignment with respect to constraints on said allocations,
>
> terminating said iterative reassigning steps when said costs are below a preselected threshold, and
>
> allocating said transmission facilities in accordance with the reduced cost assignment.

If asked to review this claim in light of the Federal Circuit's *Bilski* decision, the BPAI might today find that it does not recite patentable subject matter. The BPAI might find that, although the claim mentions "telecommunications transmission facilities" in the body of the claim, the subject matter of the claim is not tied to those facilities. Instead, the claim describes a series of steps to be performed by a general purpose computer. Consequently, the BPAI might decide that the claim merely recites software and does not satisfy the "machine" prong of the machine–or–transformation test.

Further, the BPAI might today decide that, while transmission facilities are allocated in the last step of the claim, that allocation is represented by mere data in the computer and the transmission facilities are not transformed by the claimed process. *See Ex Parte Nawathe*, 2009 WL 327520 at *4 (BPAI February 9, 2009) (transforming input XML documents into represented data is not a transformation because "documents are not an article . . . [r]ather, they are mere data that represent such entities"). Accordingly, the BPAI might find that the claim does not satisfy the transformation prong of the machine–or–transformation test and that, as a result, the claim does not qualify as patentable subject matter. As a result, an exemplary software patent may not have issued.

One commentary criticizes the '028 Patent saying that "serious questions exist as to the boundaries of even this patent, questions as to whether its claims are truly novel, and whether Karmaker [the inventor] actually 'possessed' all the technologies claimed." BESSEN & MEURER, *supra*, at 202. These questions illustrate a better approach to questioning the validity of this patent. The threshold for patentable subject matter should be low, and should not exclude software, and the other tests for patentability, i.e., novelty under 35 U.S.C. § 102, obviousness under 35 U.S.C. § 103, and the various requirements of 35 U.S.C. § 112, should be applied as more appropriate gate–keepers.

iii. Sperry Corporation's LZW compression patent.

Law.com describes U.S. Patent No. 4,558,302, entitled High Speed Data Compression and Decompression Apparatus and Method, U.S. Patent No. 4,558,302 (issued Dec. 10, 1985) ("'302 Patent"), as "the patent that spurred the growth of the Web from little known medium used by techies for sending files to a worldwide phenomena." Alan Cohen, *The Squishy Patent*, NAT'L L.J., Aug. 8, 2002, *http://www.law.com/jsp/article.jsp?id=1028321281489* (last visited July 9, 2009). "The LZW algorithm provides a fast, elegant way to compress and decompress data. It is the trick that allows Web users to view photos and animations without waiting hours for them to download. Every time you call up CNN.com, Yahoo or just about any other Web site, you're looking at LZW compression in action." *Id.*

Claim 107 of the '302 Patent is repeated below:

> 107. In a data compression and data decompression method, a compression method for compressing a stream of data character signals into a compressed stream of code signals, said compression method comprising the steps of
>
> storing, in the locations of a memory, strings of data character signals encountered in said stream of data character signals, respectively, said stored strings having code signals associated therewith, respectively, said locations of said memory being accessable by a plurality of address signals, respectively, each said string of data character signals comprising a prefix string of data character signals and an extension character signal, said prefix string corresponding to a string stored in said memory,
>
> searching said stream of data character signals by comparaing said stream to said stored strings to determine the longest match therewith,

> inserting into said memory, for storage therein, an extended string comprising said longest match with said stream of data character signals extended by the next data character signal following said longest match,
>
> assigning a code signal corresponding to said stored extended string, and
>
> providing the code signal associated with said longest match so as to provide said compressed stream of code signals.

If asked to review this claim in light of the Federal Circuit's *Bilski* decision, the BPAI might find that it does not recite patentable subject matter. The various steps set out in the claim all appear to be intended to be performed in software and there is no reference in the claim to a particular machine. Therefore, the BPAI might find that the claim does not satisfy the "machine" prong of the machine-or-transformation test.

Further, the BPAI might today find that the only thing that is transformed in the claim is data, that transforming data is not sufficient to satisfy the "transformation" prong of the machine-or-transformation test, *see Ex Parte Nawathe*, *supra*, at *4 (transforming data is does not satisfy the "transformation" prong of the test), and therefore that claim 107 of the '302 Patent does not claim patentable subject matter.

3. The proper standard that should govern in determining whether a process is patent–eligible subject matter under section 101 is the test for processes stated in *Diehr*

This Amicus believes, for the reasons set out above, that the Federal Circuit erred in adopting the machine–or–transformation test as the sole test for determining whether a process is patent eligible subject matter. The Federal Circuit seemed reluctant to come to that conclusion, apparently driven by its interpretation of this Court's precedent. *See In re Bilski*, 545 F.3d at 956 ("we agree that future developments in technology and the sciences may present difficult challenges to the machine–or–transformation test, just as the widespread use of computers and the advent of the Internet has begun to challenge it in the past decade"). The Federal Circuit appeared to invite this Court to speak to the standard, writing that "we recognize that the Supreme Court may ultimately decide to alter or perhaps even set aside [the machine–or–transformation test] to accommodate emerging technologies." *Id.*

This Court, however, has already given guidance as to the proper standard in *Diamond v. Diehr*. This Amicus urges this Court to reject the machine–or–transformation test and return the "[t]ransformation and reduction of an article 'to a different state or thing'" analysis stated in its precedent. Determining whether a process is patent–eligible subject matter under section 101 should be a two–step process: (a) determine whether the process falls under one of the exclusions from patent coverage (laws of nature, natural phenomena, and abstract ideas), and, if not, (b) apply the general rule for process claims set out by the Court in *Diehr* : "[t]he process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence," *Id.*, at 184 (quoting *Cochrane*, 94 U.S. at 780, 787–88); and that "'[t]ransformation and reduction of an article "to a different state or thing" is the clue to the patentability of a process claim that does not include particular machines.'" *Diehr*, 450 U.S. at 184 (quoting *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972)).

To determine if a process falls under the "abstract ideas" exclusion, the test should be whether the claim seeks to pre–empt the use of a fundamental principle as opposed to seeking to foreclose others from using a particular "application" of that fundamental principle, as set out in *Diehr*.

The long period of time and the tremendous technological advances that have occurred since the *Cochrane* opinion issued in 1877 justify updating the portion of the formulation concerning "certain substances" to include intangible articles, such as commodity consumption risk and ownership interests, as in this case, and this Amicus urges this Court to make that clarification.

Further, this case gives this Court an opportunity to sweep away other formalisms that have crept into section 101 law. The Court's existing precedent in this area has proven to be all too easily manipulated into frustrating the intent of Congress that statutory subject matter should "'include anything under the sun that is made by man.'" *Diehr*, 450 U.S. at 182 (discussing the legislative history of the 1952 Patent Act). Is there any argument that computer software and data are not "made by man"? And yet, the Federal Circuit, and the BPAI observing the Federal Circuit's mandates, has followed this Court's precedent to decide that they are not patentable subject matter. This Amicus urges the Court to indicate that merely because a claim must be implemented in software or that it involves solely the manipulation of data, that claim does not necessarily pre–empt the use of a fundamental principle.

In summary, this Court has rejected the Federal Circuit's attempts to formularize abstract patent law concepts. *See KSR International v. Teleflex, Inc.*, 550 U.S. 398, 415 (2007) (rejecting the Federal Circuit's "rigid approach" to obviousness analysis); *Festo Corp.* 535 at 738 (rejecting the Federal Circuit's rigid approach to prosecution history estoppels); *Warner–Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 17, 39–40 (1997) (refusing to participate in a debate regarding the "particular linguistic framework" used to analyze the doctrine of equivalents). The Court should do the same in this case and reject the machine–or–transformation test as the sole test for determining whether process claims recite patentable subject matter.

B. The Federal Circuit's Adoption of the "Machine–or–Transformation" Formula as the "Only Applicable Test" to Determine Patent Eligibility for a Process Contradicts the Clear Congressional Intent that Patents Protect "method[s] of doing or conducting business.

This Amicus urges this Court to reject the machine–or–transformation test for patent claims to methods of doing or conducting business for the reasons described above. Such claims should be considered patentable subject matter if they satisfy the *Diehr* test described above.

Respectfully submitted,

STEPHEN KOCH
President
HOWARD SPEIGHT*
HOUSTON INTELLECTUAL
PROPERTY LAW ASSOCIATION
9601 Katy Freeway
Suite 280
Houston, TX, 77024

Counsel for Amicus Curiae

* *Counsel of Record*

AMICUS
CURIAE
BRIEF

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In The
Supreme Court of the United States

◆

BERNARD L. BILSKI and RAND A. WARSAW,

Petitioners,

v.

JOHN J. DOLL, Acting Under Secretary of
Commerce for Intellectual Property and
Acting Director, Patent and Trademark Office,

Respondent.

◆

**On Writ Of Certiorari To The
United States Court Of Appeals
For The Federal Circuit**

◆

BRIEF OF THE INTELLECTUAL PROPERTY LAW ASSOCIATION OF CHICAGO AS AMICUS CURIAE SUPPORTING NEITHER PARTY

◆

EDWARD D. MANZO
COOK ALEX LTD.
200 W. Adams, Suite 2850
Chicago, IL 60606
312-236-8500
*Counsel of Record for
Amicus Curiae,
The Intellectual Property
Law Association of Chicago*

PATRICK G. BURNS
President, THE INTELLECTUAL
PROPERTY LAW ASSOCIATION
OF CHICAGO
P.O. Box 472
Chicago, IL 60609
312-987-1416

Of Counsel:
DONALD W. RUPERT
MARSHALL, GERSTEIN &
BORUN LLP
233 South Wacker Drive
6300 Sears Tower
Chicago, IL 60606
312-474-6300

Of Counsel:
JOHN R. CROSSAN
CROSSAN INTELLECTUAL
PROPERTY LAW, LLC
70 W. Madison St.,
Suite 5050
Chicago, IL 60602
312-602-1071

COCKLE LAW BRIEF PRINTING CO. (800) 225-6964
OR CALL COLLECT (402) 342-2831

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INTEREST OF AMICUS CURIAE

Founded in 1884, the Intellectual Property Law Association of Chicago (IPLAC) is a voluntary bar association of over 1,000 members who work daily with patents, trademarks, copyrights, trade secrets, and the legal issues that such intellectual property presents.[1] IPLAC is the country's oldest bar association devoted exclusively to intellectual property matters. Its members include attorneys in private and corporate practice as well as government service, whose work routinely involves intellectual property rights. Many of its members are admitted to practice before the U.S. Patent and Trademark Office (PTO) as well as state and federal bars throughout the United States. Its members and the businesses they serve are involved in literally every technological and scientific discipline existing today, *e.g.*, chemistry, electronics, computer hardware and software, biotechnology, green technology, nanotechnology, and many others. In the litigation context, IPLAC's members are split about equally between plaintiffs and defendants, with all of these technologies routinely litigated.[2]

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[1] Consents to file this brief from the counsel of record for all parties are on file with the Clerk of the Court pursuant to Supreme Court Rule 37.3(a). This brief was not authored, in whole or in part, by counsel to a party, and no monetary contribution to the preparation or submission of this brief was made by any person or entity other than IPLAC or its counsel. After reasonable investigation, IPLAC believes that no member of its Board or Litigation or Amicus Committee who voted to prepare this brief on its behalf, or any attorney in the law firm or corporation of such a board or committee member, represents a party with respect to this litigation. Some committee members or attorneys in their respective law firms or corporations may represent entities that have an interest in other matters which may be affected by the outcome of this litigation.

As part of its central objectives, IPLAC is dedicated to aiding in the development of the patent laws both in the PTO and in the courts. Accordingly, IPLAC has a vital interest in the issue presented by this case, which will have a far-reaching impact on patent rights. The question before this Court is whether a process can be considered for patent eligibility under 35 U.S.C. § 101 only if the process is tied to a particular machine or apparatus, or transforms a particular article into a different state or thing ("machine-or-transformation" test). The Federal Circuit adopted this rigid test in the face of this Court's precedent which mandates a broader application of Section 101. Section 101 fulfills a gatekeeper function to ensure that certain types of inventions are not subject to patent coverage. This Court has defined such excluded inventions as those which seek patents on natural phenomena, laws of nature, or abstract ideas. Apart from these categories, this Court has considered Section 101 to be a broad provision that accords patent eligibility to "*any* new and useful process . . . " [emphasis added]. This construction is in keeping with the Constitutional power vested in Congress, "To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." U.S. CONST., Article I, Sec. 8. Once an invention meets the broad patent eligibility requirements of Section 101, other substantive portions of the patent statute are used to determine if the invention is novel, non-obvious, and otherwise deserving of patent protection. *See, e.g.*, 35 U.S.C. §§ 102, 103, 112.

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[2] While over 30 federal judges are honorary members of IPLAC, none of them was consulted or participated in any way regarding this brief.

◆

SUMMARY OF ARGUMENT

The Federal Circuit's rigid "machine-or-transformation" test must be rejected as the sole test for determining whether a process invention is patent-eligible ("statutory"). That test is too narrow and does not comport with this Court's expansive view of Section 101 and the Court's actual applications of Section 101.

◆

ARGUMENT

The Bilski invention is a method for organizing business events or for conserving assets (*i.e.*, lowering future costs of goods to be purchased in a changing economic climate). This invention failed the Federal Circuit's "machine-or-transformation" test and was pronounced ineligible for patent.

IPLAC urges this Court to reject the Federal Circuit's rigid "machine-or-transformation" rule, as inconsistent with Section 101 of the patent statute, 35 U.S.C. § 101, in favor of this Court's long-established tests, such as were reaffirmed twenty-eight years ago in *Diehr.*[3] IPLAC takes no position on whether the invention in the Bilski patent application is patent-eligible under either this Court's existing tests or the new one announced by the Federal Circuit.

The primary issue before the Court is the proper interpretation of 35 U.S.C. § 101 and what constitutes patent-eligible subject matter under that statute. This issue is not new. For over two centuries, the patent laws of this country have been viewed as a way to encourage innovation. Indeed, in 1807, Thomas Jefferson recognized that personal ingenuity should be fostered when he wrote, "Nobody wishes more than I do that ingenuity should receive a liberal encouragement."[4] Such "liberal encouragement" is embodied in Section 101, which as this Court explained in 1980 is a broad provision:

> The subject-matter provisions of the patent law have been cast in broad terms to fulfill the constitutional and statutory goal of promoting "the Progress of Science and the

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[3] *Diamond v. Diehr*, 450 U.S. 175, 101 S.Ct. 1048 (1981).

[4] *Graham v. John Deere Co.*, 383 U.S. 1, 8, 86 S.Ct. 684, 689 (1966), quoting Letter to Oliver Evans (May 1807), 5 Writings of Thomas Jefferson, at 75-76 (Washington ed.).

> useful Arts" with all that means for the social and economic benefits envisioned by Jefferson. Broad general language is not necessarily ambiguous when congressional objectives require broad terms.

Diamond v. Chakrabarty, 477 U.S. 303, 315, 100 S.Ct. 2204 (1980) (quoting U.S. CONST. Art. I, § 8, which declares that the purpose of the patent system is "to promote the Progress of . . . useful Arts . . . ").

However, the Federal Circuit has now wandered from Jefferson's ideal and from the decisions of this Court, essentially rewriting Section 101 to restrict its scope in a way that neither Congress nor this Court have previously approved. The Federal Circuit has stated *en banc* that subject matter is patent-eligible under Section 101 only if it meets that court's newly-enunciated "machine-or-transformation" test. The Federal Circuit majority emphasized that this test is the exclusive Section 101 test by reiterating it no less than four times. *See, e.g., In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) at 956 (" . . . we . . . reaffirm that the machine-or transformation test, properly applied is the governing test for determining patent eligibility of a process under § 101"); 959 ("Rather, the machine-or-transformation test is the applicable test for patent-eligible subject matter."); 959-60 ("Therefore, we also conclude that the "useful, concrete and tangible result" inquiry is inadequate and reaffirm that the machine-or-transformation test outlined by the Supreme Court is the proper test to apply"); and 961 ("Thus, the proper inquiry under § 101 is not whether the process claim recites sufficient 'physical steps,' but rather whether the claim meets the machine-or-transformation test.").

The breadth of Section 101 is found in its words. It states:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The Federal Circuit has rewritten this straightforward statute by adding a requirement that is nowhere authorized nor implied. The statute, as the Federal Circuit sees it, now must be read as containing the emphasized language:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title, *provided that no process nor improvement thereof shall be deemed eligible for a patent under this Section 101 unless it either is performed by a specifically identified machine or transforms an article from one state to another.*

Indeed, the Federal Circuit's new test ignores the definition of "process" found in 35 U.S.C. § 100(b) ("The term 'process' means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material."). This definition, added to the Patent Act in 1952, is not limited to a process that is performed on a specific machine or one that transforms the state of an article. The Federal Circuit noted the presence of the definition but deemed it "unhelpful given that the definition itself uses the term 'process.'" *In re Bilski*, 545 F.3d at 951, n.3. The Federal Circuit's rigid test affects this definitional Section as well.

IPLAC submits that it is inappropriate to rewrite Section 101, as the Federal Circuit has done. Rather, the statute can be properly applied by reaffirming its breadth and confirming, as this Court did in *Diamond v. Diehr*, that the only limits to patent eligibility are those that bar patent protection on "laws of nature, natural phenomena, and abstract ideas." All other useful processes, etc., are eligible subject matter for patent protection. *See* IPLAC's proposed test, Sec. V *infra*.

Human ingenuity extends far beyond processes of making or transforming things. IPLAC submits that the Federal Circuit's bright-line rule specifying eligible subject matter for patenting is contrary to the statute, as is confirmed by rulings of this Court that have twice affirmatively rejected such a narrow interpretation. If any bright-line rule belongs in this subject area, such a rule should focus on what is rightly excluded, just as the Court's rule in *Diehr* did. IPLAC submits that limitations regarding eligibility for the patenting of methods should be confined to denying patents which claim laws of nature, the mere discovery of physical phenomena, and abstract ideas, and that this Court should affirm its long-held opinion that patents for processes which accomplish "new and useful" results are eligible for patenting.

I. The Federal Circuit's Rigid "Machine-or-Transformation" Test Would Exclude Inventions This Court Has Previously Sustained

IPLAC acknowledges that if an invention meets the "machine-or-transformation" test, that invention is patent-eligible, *i.e.*, it is "statutory subject matter" under 35 U.S.C. § 101. However, the converse is not always true. That is, even if a process does not meet the machine-or-transformation test, it can still be patent eligible under this Court's precedent.

The Federal Circuit's machine-or-transformation test is akin to its "teaching-suggestion-motivation" (TSM) test that was used to determine if a patent claim was obvious, and hence invalid, under 35 U.S.C. § 103. Both tests are rigid in that each was designed to be applied in a formulistic fashion. Under TSM, if a prior art reference did not reasonably teach, suggest, or motivate one to combine the prior art to arrive at the claimed invention, then the reference did not support obviousness. This Court rejected the TSM test as the one and only test to be applied in judging obviousness and reaffirmed that obviousness is not the prisoner of formula.[5] The Court noted that TSM may, of course, be used, but that the test is not the exclusive measure of patent obviousness.

The Federal Circuit's "machine-or-transformation" test mandates that there simply is no statutory subject matter unless the invented process uses a specific "machine" or "transforms" the state of an article. Although the "machine-or-transformation" test may be useful as one test for establishing some inventions as patent-eligible, it is not appropriate to use that test as the sole measure of patent eligibility. This Court's decision in *O'Reilly v. Morse*, 15 How. 62, 56 U.S. 62 (1853), highlights this point.

In *O'Reilly v. Morse*, this Court considered claims in Samuel Morse's patent directed to using electromagnetism to reproduce letters and words at remote distances. The Court ruled that claim 8 was unpatentable because the claim was not confined to any particular process or structure, or even to the content of the specification.[6] However, the Court

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[5] *See KSR Int'l. Co. v. Teleflex, Inc.*, 550 U.S. 398, 127 S.Ct. 1727 (2007).

[6] The Court found invalid only claim 8 ("the use of the motive power of the electric or galvanic current, which I call electromagnetism, however developed, for making or printing intelligible characters . . . at any distances, being a new application of that power . . . "). The Court discussed several bases for this, including that the specification was not commensurate with the scope of the claim, the claim was overbroad, that some implementations within the scope of claim

(Continued on following page)

voiced no objection to Prof. Morse's fifth claim (of the patent as reissued in 1848) directed generally to a type of code – such as the Morse code – set forth in the claim as follows: "Fifth. I claim, as my invention, the system of signs, consisting of dots and spaces, and of dots, spaces, and horizontal lines, for numerals, letters, words, or sentences, substantially as herein set forth and illustrated, for telegraphic purposes." 56 U.S. at 86.

Under the current statute, 35 U.S.C. § 101, this fifth claim covering a "system of signs" (code) is not a "machine, manufacture, or composition of matter." Nor is the fifth claim directed to a "new and useful improvement" of any machine, manufacture or composition of matter. In the language of the current statute, the only other patent-eligible subject matter is a "new and useful process." As to that, the claim is not tied to a particular machine, although the claim notes that the code is used "for telegraphic purposes." It does not transform matter. It is a set of symbols that a machine *or human being* might transmit or understand. It was used extensively for many decades in the business of communicating. It would fail a rigid application of the "machine-or-transformation" test.[7]

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8 may be inoperative, and that the claim was purely functional without connection to any structure.

[7] Morse's sixth claim (1848 reissue), unlike the fifth, included specific reference to recording machinery: "Sixth. I also claim as my invention the system of signs, consisting of dots and spaces, and of dots, spaces, and horizontal lines, substantially as

(Continued on following page)

No one could seriously challenge Prof. Morse's fifth claim as a law of nature or that it wholly preempts an algorithm. Neither is a code based on dots and spaces an abstract idea. Nor is it a physical phenomenon. This fifth claim would be patent-eligible under this Court's expansive application of Section 101, but not under the Federal Circuit's test imposed below.

Human ingenuity has extended beyond codes to other methods that do not transform matter and are not specific to a machine. One fertile area of innovation concerns amusement and gaming, where thousands of patents have issued. One example is

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herein set forth and illustrated, in combination with machinery for recording them, as signals for telegraphic purposes." 56 U.S. at 86.

Without indicating whether it was discussing claim 5, 6, or some other claims, the Court included some general language about the invention at the end of the majority opinion: "Neither is the substitution of marks and signs, differing from those invented by Professor Morse, any defence to this action. His patent is not for the invention of a new alphabet; but for a combination of powers composed of tangible and intangible elements, described in his specification, by means of which marks or signs may be impressed upon paper at a distance, which can there be read and understood. And if any marks or signs or letters are impressed in that manner by means of a process substantially the same with his invention, or with any particular part of it covered by his patent, and those marks or signs can be read, and thus communicate intelligence, it is an infringement of his patent. The variation in the character of the marks would not protect it, if the marks could be read and understood." *Id.* at 124.

U.S. Patent 5,685,774 for a method for playing card games.[8] Another area of innovation concerns agriculture where, for example, U.S. Patent 6,338,040 concerns a method for delaying development in a pest species of resistance to a pest control technique, using crop insurance to encourage correct uses of refuges.[9] No reason appears for excluding these and similar advances from the protections and advantages of the patent laws, as would result if the Federal Circuit's new test were upheld.

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[8] Claim 1 provides: "1. A method of playing a card game involving one or more persons acting as a dealer and a banker, and at least one player, the method comprising the steps of:

(a) determining whether to place a first bet that the player's hand will be greater than a first predetermined rank, where a plurality of hands are ranked according to predetermined rules and the first bet is a fixed payout bet;

(b) determining whether to place a second bet that the player's hand will beat the dealer;

(c) placing at least one of the first and second bets;

(d) the dealer dealing to each player and the dealer a hand consisting of three cards;

(e) the or each player who placed the second bet deciding, based on the player's hand, either to forfeit the second bet to the banker or to place a third bet;

(f) the dealer determining whether the dealer's hand exceeds a second predetermined rank, and if the dealer's hand does not exceed the second predetermined rank, the bank paying each player an amount based on the second bet and returning the third bet to the player, or

if the dealer's hand exceeds the second predetermined rank, comparing the dealer's hand in turn with that of each other player who placed the second bet and if the player's hand is higher, the banker paying the player an amount based on both the second and third bets, and if the player's hand is lower, the player forfeiting both the second and third bets to the banker; and

(g) the banker paying the fixed payout bet in accordance with a predetermined scale to any player who placed the first bet and whose hand exceeds the first predetermined rank."

---

[9] Claim 1 provides: "1. A method of encouraging and facilitating producers assisting in delaying the development in a pest species of resistance to a bio-genetic control technique directed against that species in the use of a primary asset employing that control technique, using refuges set out by individual ones of the producers, each of the refuges using a similar asset not employing that control technique and meeting conditions specified for management of the primary asset in regard to that pest species, the method comprising the steps of:

entering into a policy of indemnity insurance with each of a plurality of producers on the yields of the similar asset in the refuges as against any damage to be caused by the pest species therein;

facilitating the growing [of] the primary asset in a first area and the similar asset in a second, refuge area, the first and second areas being laid out according to the conditions specified and the sizes and locations of such areas facilitating interbreeding of resistant and non-resistant members of the pest species;

inspecting, measuring, and testing each of the refuge areas for compliance with the conditions specified, and, if the conditions are complied with, also inspecting and testing the refuge asset and then computing, accounting and paying to ones of said producers meeting the conditions at least part of any estimated damage caused by the pest species to the similar asset in compliant ones of the refuges,

thereby avoiding economic disincentive to the producers against properly using refuges in management of the primary asset."

II. The "We Do Not Hold" Precedents Militate Against a Rigid Rule

The Federal Circuit majority's decision in *Bilski* misapplies and contradicts this Court's precedent. In considering the patentability of an algorithm to improve the efficiency of a digital computer in *Gottschalk v. Benson*, 409 U.S. 63 (1972), this Court was asked to make "machine-or-transformation" the sole, universal rule of patent eligibility. This Court explicitly declined that invitation, stating:

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a "different state or thing." We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.

409 U.S. at 71, 93 S.Ct. at 257.

This Court announced expressly that while "machine-or-transformation" may be a consideration, it is not the only test for statutory subject matter: some other subject matter may be statutory even if it is not a "machine-or-transformation."

A few years later, this Court reiterated its caveat, stating, "As in *Benson*, we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents. 409 U.S., at 71, 93 S.Ct., at 257." *Parker v. Flook*, 437 U.S. 584, 588 n. 9, 98 S.Ct. 2522, 2525 n. 9 (1978). The *Flook* opinion, 437 U.S. at 589, 98 S.Ct. at 2525, reiterated the well-known exclusions recounted in *Benson*:

> "'A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right.' *Le Roy v. Tatham,* 14 How. 156, 175. Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work." 409 U.S., at 67, 93 S.Ct., at 255.

The Court then cautioned that the line between what is a patentable "process" and an unpatentable "principle" is not always clear, 437 U.S. at 589, 98 S.Ct. at 2525, and said that the proper analysis is to determine whether the " . . . process itself, not merely the mathematical algorithm, [is] new and useful." 437 U.S. at 591, 98 S.Ct. at 2526.

This "new and useful" approach is consistent with the express language of the statute as well as with dicta in *Graham v. Deere,* 383 U.S. 1, 86 S.Ct. 684 (1966). In *Graham*, this Court mentioned "business" in discussing the Constitution's enabling provision for patents; the Constitution limits the patent-granting power to, among others, "useful arts" and then only to inventions that *promote* progress in contradistinction to patents covering "business" as were once granted by the British Crown.[10] Certainly "new and useful" processes that "promote the Progress of the useful Arts" are not limited to those that may satisfy the Federal Circuit's "machine-or-transformation" test.

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[10] "This qualified authority, unlike the power often exercised in the sixteenth and seventeenth centuries by the English Crown, is limited to the promotion of advances in the 'useful arts.' It was written against the backdrop of the practices – eventually curtailed by the Statute of Monopolies – of the Crown in granting monopolies to court favorites in goods or businesses which had long before been enjoyed by the public. *See* Meinhardt, *Inventions, Patents and Monopoly*, pp. 30-35 (London, 1946). The Congress in the exercise of the patent power may not overreach the restraints imposed by the stated constitutional purpose. Nor may it enlarge the patent monopoly without regard to the innovation, advancement or social benefit gained thereby. Moreover, Congress may not authorize the issuance of patents whose effects are to remove existent knowledge from the public domain, or to restrict free access to materials already available. Innovation, advancement, and things which add to the sum of useful knowledge are inherent requisites in a patent system which by constitutional command must 'promote the Progress of * * * useful Arts.' This is the standard expressed in the Constitution and it may not be ignored. And it is in this light that patent validity 'requires reference to a standard written into the Constitution.' *Great A. & P. Tea Co. v. Supermarket Equipment Corp., supra*, 340 U.S. at 154, 71 S.Ct. at 131 (concurring opinion)." *Graham v. John Deere Co., supra*, 86 S.Ct. at 687-88.

III. Subsequent Precedents of This Court Also Militate Against a Rigid Rule

The next patentable subject matter ruling by this Court concerned genetically-engineered microorganisms, *Diamond v. Chakrabarty*, 447 U.S. 303, 100 S.Ct. 2204 (1980). The Court did not address a process but instead considered whether a living organism should be patent-eligible. The Court saw the issue as one of statutory construction and observed that the language chosen by Congress for identifying subject matter eligible for patenting "plainly contemplated that the patent laws would be given wide scope." 447 U.S. at 308, 100 S.Ct. at 2207. It cited legislative history for the 1952 Patent Act as informing the Court that "anything under the sun that is made by man" is within Congress' intent. However, the Court reiterated that Section 101 has limits: laws of nature, physical phenomena, and abstract ideas are not patentable. 447 U.S. at 309, 100 S.Ct. at 2207.

Subsequently, in *Diamond v. Diehr*, 450 U.S. 175, 101 S.Ct. 1048 (1981), the Court again addressed the scope of patent-eligible subject matter, considering there a process for making synthetic rubber. The Court again saw the question as one of statutory construction, finding the process to be eligible subject matter. While the *Diehr* Court did note the statement in *Benson* concerning transformation and reduction of an article to a different state or thing as " . . . the clue to the patentability of a process claim that does not include particular machines," 450 U.S. at 184, 101

S.Ct at 1055, it said nothing to overrule the caveats in *Benson* itself and in *Flook* that *other* subject matter might also be patent-eligible.

The Federal Circuit seems to have dismissed this Court's caveats in *Benson* and *Flook* because the Court has not reiterated them in each subsequent decision. However, that a plain caveat is not restated is no clear indication that this Court has changed the law. If the intent of this Court were to retreat from its own express caveats, it would have said so plainly. Moreover, such caveats were not involved in the subsequent cases – one involved a question of living matter rather than a process, and the other was a machine process for making synthetic rubber. Neither of those cases involved exploring new territory in the patent-eligibility of processes.

IV. Congress Has Shown How It Intends To Deal With Certain Classes of Invention, and Has Shown No Desire To Exclude Business Methods Generally

Congress has chosen not to amend 35 U.S.C. § 101 to exclude subject matter from patent-eligibility in those instances where patents have been granted that raised concerns. Instead, Congress has acted to maintain the broad scope of Section 101 while addressing its particular concerns specifically. When patents issue for specific classes of subject matter about which Congress has concerns, it does not amend 35 U.S.C. § 101 to exclude them. A clear example of this concerns medical procedures. Inventions were being made, and patents issuing, for surgical or medical procedures. Congress decided not to remove the economic incentive for such inventions but simply amended another part of the patent statute so that even if a medical practitioner were infringing a patent, no remedy could be obtained against him or her.[11] Any remedies would have to come from others, *e.g.*, business corporations supplying components or accessories for the procedure.

Similarly, when faced with concerns about the rise of business method patents and defenses to them, Congress enacted the First Inventor Defense Act of 1999. Pub. L. No. 106-113, § 4302, 113 Stat. 1501A-555, 555-57 (1999) (codified at 35 U.S.C. § 273). Congress did not amend Section 101 to remove business methods from the subject matter that is patent-eligible. Instead, it provided a personal defense to infringement of claims reciting a method of doing or conducting business. 35 U.S.C. § 273. Congress has had several opportunities to legislate the patent-eligibility of business methods but has declined to do so. *See, e.g.*, H.R. 5346, 106th Cong. (2d Sess. 2000); H.R. 1332, 107th Cong. (1st Sess. 2001); H.R. 5299, 108th Cong. (2d Sess. 2004). In none of these bills did Congress propose to amend Section 101 in any respect.

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[11] Section 616 of the Omnibus Consolidated Appropriations Act of 1997, 104 P.L. 208, 110 Stat. 3009 amended the patent statute so that 35 U.S.C. Section 287(c)(1) now provides: "With respect to a medical practitioner's performance of a medical activity that constitutes an infringement under section 271(a) or (b) of this title, the provisions of sections 281, 283, 284, and 285 of this title shall not apply against the medical practitioner or against a related health care entity with respect to such medical activity."

Congress' actions are instructive. As this Court has counseled, where Congress has declined to place limitations on the patent laws, the courts should not impose them. *Chakrabarty*, 447 U.S. at 308; *Diehr*, 450 U.S. at 182, 101 S.Ct. at 1054.

V. A Recommended Test

IPLAC suggests that the most sensible test for subject matter eligibility, based on the Constitution, precedent, and the statute itself, is that a process is patent-eligible subject matter when it:

- is not directed exclusively to
    - a law of nature
    - a physical phenomenon, or
    - an abstract idea, and it
- provides any useful result,[12] for example if it does any of the following:

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[12] Section 101 includes the phrase "new and useful." IPLAC does not suggest that the novelty requirements of Section 102 should be imported into Section 101. Rather, "new" is statutory language, and IPLAC does not seek to delete it from Section 101.

- ○ transforms an article to a different state or thing;[13] or
- ○ involves a machine.[14]

The Court should interpret the patent statute to serve the purpose voiced by Thomas Jefferson and others, to give liberal encouragement to innovation.

VI. The Court Should Encourage Further Federal Circuit Development of This Jurisprudence

IPLAC looks forward to Supreme Court guidance on what constitutes statutory subject matter. IPLAC submits that the Federal Circuit drew an incorrect conclusion from this Court's precedents and erred when it discarded its own jurisprudence, thinking that this Court requires a "machine-or-transformation." We urge the Court to clarify that it imposes no such rigid framework and to remand the case to the Federal Circuit for further development of applicable jurisprudence.

Prior to its *Bilski* decision, the Federal Circuit's jurisprudence generally comported with this Court's holdings. For example, *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994) (*en banc*) involved an invention that made a smooth waveform in a digital oscilloscope test instrument (a machine) in presenting visual images of inputted electrical signals. The court had to determine whether the invention was statutory, and it applied a "useful, concrete, and tangible result" test consistent with this Court's precedents:

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[13] Various members of IPLAC also urge that the transformation of electronic (or electromagnetic) signals should qualify a process as statutory subject matter.

[14] Both general and specific purpose computers are now ubiquitous machines. An invention that improves a machine ought to be statutory. The improvement could be to its efficiency, functionality, suitability, or otherwise.

> The plain and unambiguous meaning of § 101 is that any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may be patented if it meets the requirements for patentability set forth in Title 35, such as those found in §§ 102, 103, and 112. The use of the expansive term "any" in § 101 represents Congress's intent not to place any restrictions on the subject matter for which a patent may be obtained beyond those specifically recited in § 101 and the other parts of Title 35. Indeed, the Supreme Court has acknowledged that Congress intended § 101 to extend to "anything under the sun that is made by man." *Diamond v. Chakrabarty,* 447 U.S. 303, 309, 100 S.Ct. 2204, 2208, 65 L.Ed.2d 144 (1980), *quoting* S.Rep. No. 1979, 82nd Cong., 2nd Sess., 5 (1952); H.R.Rep. No. 1923, 82nd Cong., 2nd Sess., 6 (1952). Thus, it is improper to read into § 101 limitations as to the subject matter that may be patented where the legislative history does not indicate that Congress clearly intended such limitations. *See Chakrabarty,* 447 U.S. at 308, 100 S.Ct.

> at 2207 ("We have also cautioned that courts 'should not read into the patent laws limitations and conditions which the legislature has not expressed.'"), *quoting United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 199, 53 S.Ct. 554, 561, 77 L.Ed. 1114 (1933).

Id. at 1542. Continuing as to the merits of the invention under consideration, the court explained, "This is not a disembodied mathematical concept which may be characterized as an 'abstract idea,' but rather a specific machine [used] to produce a useful, concrete, and tangible result." *Id.* at 1544.

In *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), the Federal Circuit dealt with a business invention practiced with a computer and dealing with mutual funds. It declared:

> Today, we hold that the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces "a useful, concrete and tangible result" – a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.

Id. at 1373.

Thus, the Federal Circuit has now, in the case below, discarded its "useful, concrete, and tangible result" test.

VII. The Present Patent Application Claims

IPLAC takes no position on the merits, and it recognizes that arguments fall on both sides as to whether Bilski's specific claims define patent-eligible subject matter.[15] On the one hand, the claims do appear to present a beneficial, useful process. Utility companies are enabled by this process to obtain raw materials at predictable costs. It is hard to deny the desirability and usefulness of fiscal improvements, particularly in today's economy. In this case, assets of one type are transformed into another type (money is transformed into commodities at controllable or knowable rates). On the other hand, the result is chiefly economic in nature.

Whether subject matter passes muster under Section 101 is of course just the beginning of determining patentability. The claims must also meet the requirements of Sections 102, 103, and 112. Some may argue that Bilski's invention of using hedging in this particular application fails under the non-obviousness test of Section 103. However, because the

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[15] Some members of IPLAC believe these specific claims are not eligible, and other members believe that no business methods ought to be eligible. Still other members believe that business methods should be patent-eligible.

Federal Circuit expressed no opinion on this point, it is most appropriate for this Court not to rule in the first instance but instead to remand the case for a determination of all remaining issues, including obviousness.

◆

CONCLUSION

This Court should remand the case to the Federal Circuit with instructions to consider the claims at issue under a revised articulation of the applicable law in which "machine-or-transformation" is not the only measure of whether process inventions are statutory subject matter.

Respectfully submitted,

EDWARD D. MANZO
COOK ALEX LTD.
200 W. Adams, Suite 2850
Chicago, IL 60606
312-236-8500
Counsel of Record for Amicus Curiae,
The Intellectual Property Law Association of Chicago

PATRICK G. BURNS
President, THE INTELLECTUAL PROPERTY LAW
ASSOCIATION OF CHICAGO
P.O. Box 472
Chicago, IL 60609
312-987-1416

Of Counsel:
DONALD W. RUPERT
MARSHALL, GERSTEIN & BORUN LLP
233 South Wacker Drive
6300 Sears Tower
Chicago, IL 60606
312-474-6300

Of Counsel:
JOHN R. CROSSAN
CROSSAN INTELLECTUAL PROPERTY LAW, LLC
70 W. Madison St., Suite 5050
Chicago, IL 60602
312-602-1071

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Petitioners,
v.
JOHN DOLL, Acting Under Secretary of Commerce
for Intellectual Property and Acting Director,
Patent and Trademark Office,
Respondent.

ON WRIT OF CERTIORARI TO THE
UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF AMICUS CURIAE INTELLECTUAL PROPERTY OWNERS ASSOCIATION IN SUPPORT OF NEITHER PARTY

STEVEN W. MILLER, *President*
RICHARD F. PHILLIPS, *Chair,*
Amicus Brief Committee
INTELLECTUAL PROPERTY
OWNERS ASSOCIATION
1501 M Street, NW
Suite 1150
Washington, DC 20005
(202) 507-4500

GEORGE L. GRAFF
Counsel of Record
112 Holly Place
Briarcliff Manor, NY 10510
(914) 762-3706

ERIC E. BENSEN
384 Euston Road South
Garden City, NY 11530
(516) 486-2250

Counsel for Amicus Curiae

224372

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INTEREST OF AMICUS CURIAE

Amicus curiae Intellectual Property Owners Association ("IPO") is a trade association representing companies and individuals in all industries and fields of technology who own or are interested in U.S. intellectual property rights.[1] IPO's membership includes more than 200 companies and a total of nearly 11,000 individuals who are involved in the association either through their companies or as inventor, author, executive, law firm, or attorney members. Founded in 1972, IPO represents the interests of all owners of intellectual property. IPO members receive about thirty percent of the patents issued by the Patent and Trademark Office to U.S. nationals. IPO regularly represents the interests of its members before Congress and the PTO and has filed *amicus curiae* briefs in this Court and other courts on significant issues of intellectual property law. The members of IPO's Board of Directors, which approved the filing of this brief, are listed in the Appendix.[2] IPO generally adheres to a policy of submitting amicus briefs on significant issues affecting its members. Because of the central importance of the scope of patent eligible subject matter under 35 U.S.C. § 101, IPO has authorized the filing of this brief urging this Court to adopt its members' view of that scope as set forth below. IPO expressly declines, however, to take any position on whether claim 1 of the 08/833,892 patent application, which was at issue below, claims patent eligible subject matter under § 101.

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[1] No counsel for a party authored this brief in whole or in part, and no such counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than the *amicus curiae*, or its counsel made a monetary contribution to its preparation or submission. The parties have consented to the filing of this brief and such consents are being lodged herewith.

[2] IPO procedures require approval of positions in briefs by a three-fourths majority of directors present and voting.

INTRODUCTION

The patent claim at issue in this case is directed to a method for hedging risk in the field of commodities trading. *In re Bilski*, 545 F.3d 943, 949 (Fed. Cir. 2008) ("*Bilski*"). Under the claimed method, a provider of a commodity, such as coal, would initiate a series of transactions with consumers at a fixed rate to insulate them from higher rates that would result from a spike in demand due to unusually cold weather. *Id.* The provider would then initiate transactions with coal suppliers at a second fixed rate that would insulate them from lower prices for coal that would result from a drop in demand due to unusually warm weather. *Id.* The offsetting positions would then operate as a hedge for the provider against unusual demand for coal. *Id.* The Patent & Trademark Office ("PTO") rejected the claim as not directed to patentable subject matter under 35 U.S.C. § 101. *Id.*

In affirming that result, the Federal Circuit held that this Court's decisions in *Diamond v. Diehr*, 450 U.S. 175 (1981) and *Gottschalk v. Benson*, 409 U.S. 63 (1972) establish a "definitive test" for determining the patent eligibility of a claimed process: whether the process "(1) . . . is tied to a particular machine or apparatus or (2) . . . transforms a particular article into a different state or things" (the "Machine or Transformation Test"). *Id.* at 954. Although the court held that there was no basis for doing so now, it did note that "future developments in technology and the sciences may present difficult challenges to the machine-or-transformation test" and opined that that this Court "may ultimately decide to alter or perhaps even set aside this test to accommodate emerging technologies." *Id.* at 956.

The Federal Circuit then went on to discuss how the test would apply in various circumstances, concentrating on its own prior decisions and those of its predecessor, the Court of Customs and Patent Appeals. *Id.* at 961-63. Because the Bilski claim admittedly did not require the use of any machine to practice the claimed process, the Federal Circuit did not attempt to define the scope of the "particular machine" aspect of the test, but concentrated its analysis to a discussion of what constitutes a "transformation into a different state or thing." *Id.* at 962.

Noting that it was "virtually self-evident that a process for a chemical or physical transformation of physical objects is patent-eligible subject matter," the court focused its discussion on electronic signals and electronically manipulated data, which it described as "the raw materials of many information-age processes." *Id.* at 962. Pointing to its predecessor's decisions in *In re Abele*, 684 F.2d 902 (C.C.P.A. 1982), and *In re Meyer*, 688 F.2d 789 (C.C.P.A. 1982), the Federal Circuit concluded that a display of data that "did not specify any particular type of data; nor . . . specify how or from where the data was obtained or what the data represented" would be insufficient, but that "the transformation of that raw data into a particular visual depiction of a physical object on a display was sufficient" to meet the test. *Id.*

As for so called "business method" patents, such as the one involved in this case, the Federal Circuit held that "transformations or manipulations simply of public or private legal obligations or relationships, business risks, or other such abstractions cannot meet the test because they are not physical objects or substances, and they are not representative of physical objects or substances." *Id.* at 962. However, the court took pains to reaffirm its holding in *State St. Bank & Trust Co. v. Signature Fin. Group*, 149 F.3d 1368 (Fed. Cir. 1998), that "business method claims . . . are 'subject to the same legal requirements for patentability as applied to any other process or method.'" 545 F.3d at 960 (quoting *State St. Bank & Trust Co.*, 149 F.3d at 1375-76).

SUMMARY OF ARGUMENT

In crafting the language defining potentially patentable subject matter, Congress used sweeping language, "Whoever invents or discovers any new and useful process . . . may obtain a patent . . ." 35 U.S.C. § 101. It is telling that Congress chose to make no carve outs from its formulation of potentially patentable subject matter. IPO urges this Court to reaffirm prior precedent that patent eligible subject matter is to be broadly construed. *Diamond v. Chakrabarty*, 447 U.S. 303 (1980) at 308 ("In choosing such expansive terms as 'manufacture' and 'composition of matter,' modified by the comprehensive 'any,' Congress plainly contemplated that the patent laws would be given wide scope."). Previously, this Court has found only three limited exceptions to patentability.[3] Today more than ever, a flexible approach to interpreting the statutory framework of the 1952 Patent Act and applying the Machine or Transformation Test is necessary in distinguishing abstract ideas from practical applications of ideas in constantly changing and rapidly evolving areas of human endeavor. *See Chakrabarty*, 447 U.S. at 309 (noting comments of the principal draftsman of the 1952 recodification that "anything under the sun made by man" is patentable subject matter).

IPO believes the Machine or Transformation Test is consistent with this Court's precedents, but, properly understood it is simply a method for distinguishing between patentable subject matter and "laws of nature, natural phenomena, and abstract ideas," which this Court has clearly held to be unpatentable subject matter. *Diehr*, 450 U.S. at 185. Thus, IPO asks this Court to make clear that the Machine or Transformation test is not the exclusive test, and to expressly authorize the courts and the PTO to develop alternative approaches to analyze particular claimed inventions on a case-by-case basis, within the broader framework. Said another way, IPO advocates that while the Machine or Transformation test is a clue, but not the only clue, to patent eligibility under § 101.

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[3] The laws of nature, physical phenomena, and abstract ideas have been held not patentable. *See Parker v. Flook*, 437 U.S. 584 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 67, (1948); *O'Reilly v. Morse*, 15 How. 61, 112-121 (1853); *Le Roy v. Tatham*, 14 How. 155, 175 (1852).

Further, there are significant gaps in the Federal Circuit's discussion of the application of the Machine and Transformation Test to contemporary and future technological developments, most particularly to the use of computers, which IPO urges this court to address in order to reduce confusion and uncertainty in the courts and the PTO. Moreover, in the one area it did discuss at some length – processes involving the use of electronic signals to transmit information, IPO believes that the Federal Circuit's discussion unduly focuses on the *contents* of the data – particularly whether or not the data creates an image of physical objects – rather than the manner in which those signals are generated.

In particular, IPO believes that this Court's long standing precedent, and the need to provide appropriate protection to valuable innovative technologies, require that a claim that sets out a method for changing any existing state of matter, including by generating or modifying an electrical, optical or any other type of signal to transmit information, is patentable, regardless of whether the subject matter being conveyed relates to images or physical objects, methods of doing business, mathematical functions, or even video games, so long as the methodology for producing the signals are sufficiently defined and the claims meet the other standards for patentability under the Patent Act.

In addition, IPO believes that a discussion of the application of the "particular machine" to the computers and other programmable devices, which have already replaced mechanical devices and "hard wired" circuitry in so many areas of contemporary life, can no longer be avoided. Although admittedly not specifically involved in this case, the failure to address the applicability of the "particular machine" to devices whose prevalence and significance could hardly have been imagined when that test was originally articulated by this court, has created huge uncertainty, not only as to the patentability of future inventions, but to the validity of some of the most valuable and important patents currently in effect, that is sure to engender extensive litigation and have a chilling effect on the investment in the research and development activities that are so important to the future strength of American industry and our ability to maintain our status in an increasingly competitive global economy.

IPO believes that the history of the development of the "particular machine" requirement clearly points the way to the appropriate application of that test to computers and other programmable devices: a process that is tied to the use of a programmable device, including a general purpose computer, generally satisfies the "particular machine" requirement for patent eligibility so long as the claim that requires that the device be programmed to perform the functions specified in the claim in the manner contemplated by the inventor and the claim otherwise meets the novelty, usefulness, non-obviousness and disclosure requirements of the Patent Act.

ARGUMENT

A. The Machine or Transformation Test – Properly Construed – is One Approach to Determine Patentability of a Process

IPO believes that the Machine or Transformation Test is consistent with this Court's precedents and serves as one appropriate measure for determining the patentability of processes, provided the test is construed and applied in a manner that adequately takes into account the broad statutory language of the Patent Act, this Court's precedent and existing and future technology. However, the statutory language of the Patent Act is broad, and the mushrooming of developments in such fields as nanotechnology, applied quantum mechanics and genomics, render it unwise to adopt a test for patentability that would or should necessarily apply to claims involving innovations for which the appropriateness of the test have never been considered. Rather, this Court should continue, as it did in *Benson*, to expressly recognize that other standards or analytic frameworks may apply in cases involving claims that are fundamentally different from those that this Court has previously had an opportunity to pass upon. *Gottschalk* v. *Benson*, 409 U.S. 63, 70 (1972)

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing.' We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.

Subject to the exceptions described above, the patent statute provides a very broad and expansive framework for what may be patented:

> Whoever invents or discovers *any new and useful process*, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title. *(emphasis added)*

35 U.S.C. § 101.

This expansive breadth was intended by Congress[4] to accomplish its Constitutional imperative to "promote the Progress of Science and useful Arts" by "securing for limited Times to . . . Inventors the exclusive Right to their . . . Discoveries." U.S. Const., art. I, § 8, cl. 8 (pertinent part).

The Machine or Transformation Test, properly seen, has been one way that the Court has determined whether a given process is patentable. Other Courts have asked whether the invention claims a "*practical method or means of producing a beneficial result or effect*" (Diamond v. Diehr 182, n.7 (quoting *Corning v. Burden*, 56 U.S. (15 How.) 252, 267-68 (1853)) (emphasis added). Although this brief will generally leave to others a detailed analysis of the history of the development of the Machine or Transformation Test, we note that this Court has used that particular test as simply one way to determine whether an invention claims a practical method or merely an abstract idea. *See Chakrabarty Id.*

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[4] This Court previously took note of the legislative intent behind the 1952 Patent Act. *See Chakrabarty* footnote 6.

The "machine" aspect of the particular test traces its origin at least to this Court's decision in *O'Reilly v. Morse*, 56 U.S. 62 (1854), discussed more fully at p. 19, *infra*, while the "transformation" aspect was initially expressed in *Cochrane* v. *Deener*, 94 U.S. 780 (1877), in which the Court, after noting that the claims in issue did not require any particular configuration of machinery, nevertheless held that a patentable "process" would include:

> [A] mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing.

94 U.S. at 788.

Starting in the early 1970's, this Court considered a trio of cases involving the patentability of process claims, starting with *Gottschalk* v. *Benson*, 409 U.S. 63 (1972), continuing with *Parker* v. *Flook*, 437 U.S. 584 (1978), and culminating in *Diamond* v. *Diehr*, 450 U.S. 175 (1981), in which this Court summarized its precedents in the following terms:

> This Court has undoubtedly recognized limits to § 101 and every discovery is not embraced within the statutory terms. Excluded from such patent protection are laws of nature, natural phenomena, and abstract ideas. "An

> idea of itself is not patentable." "A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right."

450 U.S. at 185 (internal citations omitted).

The *Diehr* majority stressed that the Court's holdings in *Benson* and *Flook* "stand for no more than these long-established principles." *Id.* As this Court has recognized, the need to distinguish between patent eligible processes and unpatentable abstract ideas or laws of nature has always presented the courts with difficult issues. *See, e.g., Parker v. Flook*, 437 U.S. 584, 589 (1978) ("The line between a patentable 'process' and an unpatentable 'principle' is not always clear."); *Risdon Iron & Locomotive Works*, 158 U.S. 68, 71 (1895) ("That certain processes of manufacture are patentable is as clear as that certain others are not, but nowhere is the distinction between them accurately defined."). Accordingly, the Machine or Transformation Test must not be applied rigidly, and indeed there are instances in which it is inappropriate. It is one useful approach to determine whether a claimed process falls within § 101, but it cannot be definitively stated to be the exclusive approach. The analysis necessarily must adapt to the specific facts of each form of practical innovation.

Indeed, the opinion of the Federal Circuit itself recognizes the difficulty of a "one size fits all" test:

> . . . [W]e agree that future developments in technology and the sciences may present

> difficult challenges to the machine-or-transformation test, just as the widespread use of computers and the advent of the Internet has begun to challenge it in the past decade. Thus, we recognize that the Supreme Court may ultimately decide to alter or perhaps even set aside this test to accommodate emerging technologies.

545 F.3d at 956.

It is hard to imagine any single test sufficing to differentiate patentable processes from unpatentable subject matter under §101. No matter how the Machine or Transformation test is formulated and refined, there will always be scope for innovation outside such test, while also falling outside this Court's long established exclusion of "abstract ideas, laws of nature and natural phenomenon".

In sum, IPO believes that the Court should again recognize, as it did in *Benson*, the possibility that process claims might not fit neatly into the Machine or Transformation Test, and may require the application of a modified or different standard in order to appropriately accord with the broad legislative framework that Congress has set forth.[5] IPO believes it is important for this Court not to mandate that the Machine or Transformation Test be applied rigidly, but rather to leave to the PTO and lower courts the freedom to consider other tests that can accommodate innovations that do not fit within the confines of the Machine or Transformation Test, and which nevertheless should be eligible for patent protection in order the comply with the overall policy of the Patent Act and the constitutional grant to Congress "To promote the Progress of Science and useful Arts by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." U.S. CONST. art. 1, § 8.

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[5] In *Benson*, this Court took pains to point out that it was not holding that "no process patent could ever qualify if it did not meet the requirements of our prior precedents." 409 U.S. at 7.1.

B. The Transformation of Matter Test Must Be Construed and Applied in a Manner that Recognizes and Applies Modern Technology

Although, as noted above, IPO remains concerned that many areas of practical innovation may unnecessarily be precluded from patent protection if the Machine or Transformation Test is held to be the sole test for eligibility, another pressing concern is that the courts and the PTO may construe and apply the existing test in a narrow and restrictive manner that further limits the availability of patent protection. In particular, IPO believes that when applied, both aspects of the test must be applied in a manner which clearly recognizes the significance and implications of modern technology on what constitutes a "machine" and the myriad ways in which the states of matter can be "transformed" in order to accomplish useful functions.

With respect to the "transformation" aspect of the test, the Federal Circuit noted that it is "virtually self-evident that a process for a chemical or physical transformation of physical objects" is patent-eligible subject matter. Although that is certainly true, those concepts must incorporate a recognition that matter and its properties can be physically and chemically transformed in a host of ways that were not remotely conceived of when the test was first articulated, including, but certainly not limited to modifying the DNA molecules of biological cells, and inducing and modifying the energy states of matter to control the output of electro-magnetic, nuclear or other forms energy or the quantum states of subatomic particles. IPO believes that any process which can change these or any other attributes of matter from their pre-existing state in order to perform useful functions fit within the rubric of transformation of matter under this Court's precedents and that this Court's opinion in this matter should clearly so state.

A particularly important (although hardly the only) area in which this issue has arisen is in patents involving the generation or modification of electronic, optical or other forms of signals that are used to convey information. In its decision below, the Federal Circuit recognized such signals as the "raw materials of many information age processes" and discussed at some length the applicability of the test to such signals. 545 F.3d at 962. However, without citing any authority of this Court, the Federal Circuit applied the "transformation" test in a manner that drew a distinction based not on whether the process itself involved a transformation of matter, but on the subject matter of the information that was being conveyed, concluding that a process that generated an image that happened to represent physical or tangible objects or substances would be patentable, but implying that a new method for generating signals to convey "abstract constructs such as legal obligations, organizational relationships and business risks" would not be.

In fact, however, this Court has long recognized the patentability of processes involving generation and modification of electrical and other forms of signals to convey information without regard to the subject matter of the information being conveyed. Indeed, one of the oldest and most well known examples of the application of the transformation test to a process for using electrical signals to convey information, not mentioned or considered in the decision below, is this Court's decision in the "Telephone Cases," *i.e.*, *Dolbear v. American Bell Tel. Co.*, 126 U.S. 1 (1888).

One of Alexander Graham Bell's claims involved in those cases was for a "method of and apparatus for transmitting vocal or other sounds telegraphically . . . by causing electrical undulations, similar in form to the vibrations of the air accompanying the said vocal or other sounds . . . ." *Id.* at 531. As described in the specification, the invention consisted "in the employment of a vibratory or undulatory current of electricity, in contradistinction to a merely intermittent or pulsatory current, and of a method of, and apparatus for, producing electrical undulations upon the line wire." *Id.*

In sustaining the patentability of the claimed method portion of the claim as an "art" or "process" (the two words have historically been used interchangeably in patent law), independent of the particular means or device for creating them, the Court pointed out that the generation of the electrical signals inherently required a transformation from that which existed in nature:

> In this art — or, what is the same thing under the patent law, this process, this way of transmitting speech — electricity, one of the forces of nature, is employed; but electricity, left to itself, will not do what is wanted. The art consists in so controlling the force as to make it accomplish the purpose.

126 U.S. at 532.

Thus, the claim met the "transformation" test not because of its subject matter - which required no images of physical objects or even a reproduction of intelligible speech - but because it required transformation of electricity from its natural state "by gradually changing the intensity of a continuous electric current, so as to make it correspond exactly to the changes in the density of the air caused by the sound of the voice." *Id.* at 533.

This Court's holding that the Bell claim met the statutory definition of a patentable "useful art," has been repeatedly cited with approval by this Court. *See, e.g., Gottschalk v. Benson*, 409 U.S. at 68-69; *Expanded Metal Co. v. Bradford*, 214 U.S. 366, 384, 385 (1909) (citing the Telephone Cases, among others, to illustrate the breadth of processes that can be properly claimed by a patent); *Risdon Iron & Locomotive Works*, 158 U.S. at 76-77 (referring to the Telephone Cases as "the most important case in which a patent for a process was considered"). Notably, however, the claim would not have survived the "transformation" test as construed in the opinion below since the claim "did not specify any particular type of data; nor ... specify how or from where the data was obtained or what the data represented;" nor provide that the signal being generated convey an image of a physical object.[6]

Although it is perhaps the most prominent example, the Bell claim is hardly unique in illustrating the divide between this Court's precedent and the more restrictive construction of the Machine or Transformation Test applied by the Federal Circuit in its decision below. Another important example is provided by U.S. Patent No. 1,342,885 (the "Armstrong Patent"), which disclosed the process for converting radio signals that made FM transmissions feasible. Claim 1 of the patent read:

> The method of amplifying and receiving high frequency electrical oscillatory energy which comprises, combining the incoming energy with locally generated high frequency continuous oscillations of a frequency differing from said incoming energy by a third readily-amplifiable high frequency, converting the combined energy by suitable means to produce said readily-amplifiable high frequency oscillations, amplifying the third said high frequency oscillations, and detecting and indicating the resulting amplified oscillations.

There is little doubt that the Armstrong patent, as a method of changing the state of electronic signals, claimed patent eligible subject matter under the holding of the Telephone Cases. However, it would be unlikely to survive the holding of *Bilksi* because the claim says nothing about particular types of data or an image representing a physical object. Another example is provided by U.S. Patent No. 4,901,307 (the "Gilhousen Patent"), which, in claim 33, claimed a fundamental process for cell phone communication comprised of various steps for providing, converting and transmitting communication signals. Again, there is little doubt that the Gilhousen Patent claimed eligible subject matter under the holding of Telephone Cases, but it too could not have survived the holding of *Bilksi* that a claim that "did not specify any particular type of data; nor . . . specify how or from where the data was obtained or what the data represented" is unpatentable.

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[6] Notably, neither *Bilski* nor *In re Abele* cite to the Telephone Cases.

IPO urges this Court to recognize that not only the generation and modification of electrical signals, but any other process that can alter the attributes of matter or energy from their pre-existing state, whether by manipulating the optical, phasic, genetic, magnetic, gravitational, quantum mechanical or any other attribute capable of being generated or modified and detected in order to perform a useful function, should qualify as patentable subject matter, and that the court should decisively reject the notion that the patentability of a process of conveying, manipulating or displaying information using such signals turns on the source or subject matter of the information being conveyed or whether it can generate a visual depiction of a physical object.

C. A Computer or Other Device that has been Programmed to Perform a Claimed Function is a "Particular Machine"

Citing the fact that the *Bilski* invention did not involve the use of a computer to implement its claimed process, the Federal Circuit decided to "leave to future cases the elaboration of the precise contours of machine implementation, as well as the answers to particular questions, such as whether or when recitation of a computer suffices to tie a process claim to a particular machine." 545 F.3d at 962. Although IPO recognizes the general wisdom of declining to rule upon issues that are not presented by the specific facts of the case before the court, it considers the question of patentability of computer implemented processes to be critically important and anticipates that this Court will be more than sufficiently briefed on the subject in this case to justify providing the practitioners the IPO represents, along with the PTO and the courts, with some guidance on the critical question of the patentability of process claims involving the use computers and other programmable devices.

In particular, IPO believes strongly that a blanket exclusion from patentability of processes implemented through the use of computers and other programmable devices would be harmful as a matter of policy and unjustified in light of the purpose and function of the "particular machine" test as it has developed in this Court's jurisprudence. The use of computers and other programmable devices to perform functions that have been historically performed by mechanical devices or hard-wired circuitry has become so pervasive that a blanket exclusion of process patents implemented through programmable devices would eliminate patent protection for a wide swath of our modern economy that has been built and developed in large part in reliance on the availability of such protection. Almost all analog electronics can now be represented mathematically and reproduced through modern digital circuitry and there is no logical basis for treating the invention of, for example, analog filtering processes accomplished through the use of "old fashioned" discrete resistors, capacitors, transistors and other conventional components differently from those which accomplish similar functions by programming the circuitry in a general purpose microprocessor to perform the same function. Yet, today, those functions, and indeed virtually all of the functionality of radios, televisions, telephones and many functions historically performed by mechanical devices such as clocks, adding machines, linotype machines and cameras, are now implemented primarily through the use of the software controlled operation of microprocessors capable of performing a wide variety of functions. In essence, once they have been programmed, "general purpose" computers become special purpose machines on a practical level and it would unjustifiably exclude large areas of technology from patent protection if they were simply excluded because the machine that was designed to implement them is capable of performing other functions as well.

To be sure, IPO recognizes that a general requirement that some unspecified function be performed on a computer, without more, may not be a sufficient designation of a "particular machine" for purposes of the Machine or Transformation Test.

However, a review of the historical development of the "particular machine" requirement points to the conclusion that the requirement can and should be deemed to be satisfied so long as the claim inherently requires that the computer or device be programmed to perform its function in the particular manner that was conceived by the inventor.

The "particular machine" aspect of the Machine or Transformation Test was developed more than 150 years ago as a way to satisfy this Court's concern that a patent not be used to give the patentee exclusive rights in a fundamental principle (*i.e.*, a law of nature, abstract idea or natural phenomena): where a process is tied to a "particular" machine, all other means of executing the process remain open to the public such that there is no danger of giving one patentee exclusive rights in natural principle or a means of usefully employing such principles that he or she did not invent. [7] This concern was initially articulated by this Court's holding in *O'Reilly v. Morse*, 56 U.S. 62 (1854), where the Court rejected a claim directed at the use of electro-magnetism, however created, for imprinting intelligible characters as not patent eligible. *Id.* at 120. The rationale for this result, as expressed by the court, was the need to assure that the inventor's patent was limited to the process that he invented and would not foreclose others from inventing different, and potentially superior methods of accomplishing similar results:

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[7] It will be helpful here to distinguish between limiting a process to a particular means of execution, which, as discussed above, leaves the process open to be executed by other means, and limiting a process to a field of use. In the latter situation, all other means of executing the process within the field of use would still be cut off from the public and would not ameliorate the danger that, in fact, the patentee received exclusive rights in a fundamental principle. The Federal Circuit recognized that distinction in its decision below, noting that "pre-emption of all uses of a fundamental principle in all fields and pre-emption of all uses of the principle in only one field both indicate that the claim is not limited to a particular application of the principle" (citing *Diehr*, 450 U.S. at 193 n.14 ("A mathematical formula in the abstract is nonstatutory subject matter regardless of whether the patent is intended to cover all uses of the formula or only limited uses.").

> If this claim can be maintained, it matters not by what process or machinery the result is accomplished. For aught that we now know some future inventor, in the onward march of science, may discover a mode of writing or printing at a distance by means of the electric or galvanic current, without using any part of the process or combination set forth in the plaintiff's specification. His invention may be less complicated — less liable to get out of order — less expensive in construction, and in its operation. But yet if it is covered by this patent the inventor could not use it, nor the public have the benefit of it without the permission of this patentee.
>
> Nor is this all, while he shuts the door against inventions of other persons, the patentee would be able to avail himself of new discoveries in the properties and powers of electro-magnetism which scientific men might bring to light. For he says he does not confine his claim to the machinery or parts of machinery, which he

> specifies; but claims for himself a monopoly in its use, however developed, for the purpose of printing at a distance. New discoveries in physical science may enable him to combine it with new agents and new elements, and by that means attain the object in a manner superior to the present process and altogether different from it. And if he can secure the exclusive use by his present patent he may vary it with every new discovery and development of the science, and need place no description of the new manner, process, or machinery, upon the records of the patent office. And when his patent expires, the public must apply to him to learn what it is. In fine he claims an exclusive right to use a manner and process which he has not described and indeed had not invented, and therefore could not describe when he obtained his patent. The court is of opinion that the claim is too broad, and not warranted by law.

56 U.S. at 113.

This holding was further explained in the Telephone Cases where this Court stated that "[t]he effect of [the O'Reilly] decision was, therefore, that the use of magnetism as a motive power, without regard to the particular process with which it was connected in the patent, could not be claimed, but that its use in that connection could." 126 U.S. at 534; *see also Tilghman v. Proctor*, 102 U.S. 707, 726-727 (1881)

> The eighth claim of Morse's patent was held to be invalid, because it was . . . not for a

> process, but for a mere principle. It amounted to . . . a claim of the exclusive right to the use of electro-magnetism as a motive power for making intelligible marks at a distance; that is, a claim to the exclusive use of one of the powers of nature for a particular purpose. *It was not a claim of any particular machinery, nor a claim of any particular process for utilizing the power; but a claim of the power itself* . . . .

(emphasis added).

These cases make it clear that the underlying purpose of the machine prong of the Test is to insure that the process claimed is no broader than the particular process that the inventor conceived. To put it simply, the machine embodies a particular manner of executing the process, thereby insuring that all other manners of accomplishing the same result remain open to the public.

In applying that principle, it is also important to emphasize that there is no requirement that the "particular machine" be novel or specifically designed for use in the claimed process. *Cf. Cochrane v. Deener*, 94 U.S. 780, 788 (1876) ("The machinery pointed out as suitable to perform the process may or may not be new or patentable; whilst the process itself may be altogether new, and produce an entirely new result."). Indeed, section 100(b) of the Patent specifically defines the term "process" as including "a new use of a known process, *machine*, manufacture, composition of matter, or material." (Emphasis added.) Thus, there can be no requirement that a "particular" machine be one specially designed to carry out the claimed process nor that it be novel in itself.

Applying these principles to computers readily supplies the answer to the question of whether and under what circumstances a process that is implemented on a computer or other programmable device is tied to a "particular machine." If the claim requires that the programmable device implement certain functions of a process with sufficient specificity to limit the claim to the particular process conceived by the inventor, such as by requiring the use of a specified program or algorithm, then it would satisfy the particular machine test, even though the computer is capable of performing other functions and the program may have been designed for other purposes.

Properly construed, this Court's decisions in *Benson* and *Flook* are consistent with this conclusion. Issued at the dawn of the computer age, the claim in *Benson* involved a basic algorithm for converting binary coded decimal numbers into pure binary numbers. The Court held the claim was not patentable not because it was implemented on a computer, but because it sought to claim all uses of a basic mathematical algorithm. Thus, the Court was concerned that, if the patent issued, it would "wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself." 409 U.S. at 72.

In *Flook* this Court considered the patentability of a process claim for updating the alarm limits for a catalytic converter process in which the only difference between the claimed process and the prior art was a particular mathematical algorithm which, the Court took pains to point out, was not required to be implemented on a computer or any other type of machine. Based upon an extensive review of its precedents, from *Morse* to *Benson*, the Court held that even if newly discovered, a scientific principle or mathematical formula cannot be patented but is to be treated "as though it were a familiar part of the prior art." 437 U.S. at 592. Since, in that case, the algorithm was the only aspect of the process that was claimed to have been invented, the Court rejected the claims as unpatentable. However, the court also took pains to point out that the fact that the algorithm itself could not be patented did not preclude the patentability of claims for a novel and useful application of the algorithm:

> Respondent's is unpatentable under § 101, not because it contains a mathematical algorithm as one component, but because once that algorithm is assumed to be within the prior art, the application, considered as a whole, contains no patentable invention. *Even though a phenomenon of nature or mathematical formula may be well known, an inventive application of the principle may be patented.* Conversely, the discovery of such a phenomenon cannot support a patent unless there is some other inventive concept in its application.

437 U.S. at 594 (emphasis added).

It is important to emphasize that nothing about the holdings of these cases turns on the question of whether the claimed algorithms were implemented on a computer. Indeed, the *Flook* decision took pains to emphasize that, at that time, the computer industry was too immature and there was insufficient precedent for it to consider that question:

> The youth of the industry may explain the complete absence of precedent supporting patentability. Neither the dearth of precedent, nor this decision, should therefore be interpreted as reflecting a judgment that patent protection of certain novel and useful computer programs will not promote the progress of science and the useful arts, or that such protection is undesirable as a matter of policy.

437 U.S. at 595.

Rather, the critical question was whether the claim, considered as a whole, purported to claim a novel and useful process apart from the unpatentable algorithms it employs. If so, the claims would be patentable even if (as *Flook* presumes) the algorithm itself is not.

In sum, IPO urges this Court to state unequivocally that a microprocessor based general purpose computer or other programmable device, like any other machine, can qualify as a "particular machine" for purposes of the Machine or Transformation Test, so long as its use is sufficiently limited in the patent to the implementation of a defined process for performing a useful function and does not foreclose other uses of a particular algorithm or scientific principle.

CONCLUSION

For the forgoing reasons, IPO believes that the Machine or Transformation Test, properly applied, will normally be a sufficient test for determining the eligibility of a process patent under § 101, but that the Court should make clear that applying the Machine or Transformation Test too rigidly may call into question the patent eligibility of practical innovations which go beyond mere abstract ideas, laws of nature, and natural phenomena. This Court should leave open the possibility that other specific tests or analytical frameworks may be appropriate to analyze particular innovations on a case-by-case basis, within the broader framework of section 101 of the Patent Act. Moreover, when the Machine or Transformation Test is applied, the concept of "transformation" needs to include not only tangible chemical or physical attributes of objects, but also their electrical, magnetic and any other intangible properties that are capable of being created, modified and detected to perform useful functions, including, particularly to transmit, manipulate, store or retrieve information of any kind, without regard to its subject matter. Similarly, the Court should affirm, once and for all, that the computers and other programmable devices that have become so pervasive in our modern economy can fill the role of a "particular machine" for purposes of the test so long as the device has been programed to perform a defined function in the manner contemplated by the inventor and the claims are otherwise sufficiently limited to a novel and useful process that does not pre-empt all uses of a basic mathematical formula or other law of nature or abstract idea.

Respectfully submitted,

STEVEN W. MILLER, *President*
RICHARD F. PHILLIPS, *Chair, Amicus Brief Committee*
INTELLECTUAL PROPERTY OWNERS ASSOCIATION
1501 M Street, NW
Suite 1150
Washington, DC 20005
(202) 507-4500

GEORGE L. GRAFF
Counsel of Record
112 Holly Place
Briarcliff Manor, NY 10510
(914) 762-3706

ERIC E. BENSEN
384 Euston Road South
Garden City, NY 11530
(516) 486-2250

Counsel for Amicus Curiae

APPENDIX

APPENDIX

Members of Board of Directors, Intellectual Property Owners Association*

Marc S. Adler
Marc Adler, LLC

Angelo N. Chaclas
Pitney Bowes, Inc.

William J. Coughlin
Ford Global
Technologies LLC

Timothy Crean
SAP Labs, LLC

Robert DeBerardine
Sanofi-Aventis Groupe

Bart Eppenauer
Microsoft Corp.

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AT&T

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Dow Corning Corp.

Bernard J. Graves, Jr.
Eastman Chemical Co.

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EMC Corp.

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Koninklijke Philips
Electronics, N.V.

Dennis R. Hoerner, Jr.
Monsanto Co.

Carl B. Horton
General Electric Co.

Soonhee Jang
Danisco U.S. Inc.,
Genencor Division

Philip S. Johnson
Johnson & Johnson

---

* IPO procedures require approval of positions in briefs by a three-fourths majority of directors present and voting.

Appendix

George William Johnson
Hoffmann-La Roche Inc.

Dean Kamen
DEKA R&D Corp.

Charles M. Kinzig
GlaxoSmithKline

David J. Koris
Shell International B.V.

Noreen A. Krall
Sun Microsystems, Inc.

William C. Lee, III
Coca-Cola Co.

Michelle Lee
Google Inc.

Kevin Light
Hewlett-Packard Co.

Richard J. Lutton, Jr.
Apple Inc.

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Douglas Norman
Eli Lilly and Co.

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3M Innovative
Properties Co.

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Pfizer, Inc.

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Air Products
& Chemicals, Inc.

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ZymoGenetics, Inc.

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Caterpillar Inc.

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Micron Technology, Inc.

Wayne Sobon
Accenture

Daniel J. Staudt
Siemens Corp.

Brian K. Stierwalt
ConocoPhillips

Thierry Susur
Air Liquide

James J. Trussell
BP America, Inc.

Michael Walker
DuPont

Stuart Watt
Amgen

AMICUS
CURIAE
BRIEF

No. 08-964

In The Supreme Court of The United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

DAVID KAPPOS, UNDER SECRETARY OF COMMERCE FOR
INTELLECTUAL PROPERTY AND DIRECTOR,
PATENT AND TRADEMARK OFFICE,
Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES
COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF THE INTELLECTUAL PROPERTY SECTION OF THE NEVADA STATE BAR, AS *AMICUS CURIAE* IN SUPPORT OF RESPONDENT

Charles Dominick Lombino
Lombino Law Studio, Ltd.
2421 Enchantment Circle
Henderson, Nevada 89074
(702) 357-8620

Bryce K. Earl
Santoro, Driggs, Walch,
Kearney, Holley & Thompson
400 South Fourth Street
Third Floor
Las Vegas, Nevada 89101
(702) 791-0308

Robert C. Ryan*
Holland & Hart LLP
5441 Kietzke Lane
Second Floor
Reno, Nevada 89511
(775) 327-3000

*Counsel of Record

Counsel for Amicus Curiae

LEGAL PRINTERS LLC, Washington DC ● 202-747-2400 ● legalprinters.com

QUESTIONS PRESENTED

1. Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine or transformation" test), to be eligible for patenting under 35 U.S.C. § 101.

2. Whether the Federal Circuit's "machine or transformation" test for patent eligibility contradicts the Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273.

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INTEREST OF *AMICUS CURIAE*[1]

The Intellectual Property Section of the Nevada State Bar is a voluntary group of approximately 125 attorneys who are members of the Nevada State Bar ("Nevada IP Section"). This *amicus curiae* brief is presented on behalf of the Nevada IP Section in accordance with the approval granted by the Nevada IP Section and the Board of Governors of the Nevada State Bar.

Nevada IP Section members represent a wide range of clients both in and out of the State of Nevada, including inventors, owners, and users of intellectual property. Accordingly, the Nevada IP Section's interest is to preserve and promote a robust patent system that fosters business and entrepreneurial activity, enhances the economic and social welfare of the State of Nevada's populace, and protects the rights of inventors generally, thus fulfilling the purpose expressly specified for the patent and copyright laws in the United States Constitution, Article I, Section 8, Clause 8.

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[1] In accordance with Supreme Court Rule 37, *amicus curiae* provided timely notice to the parties and the parties have consented to the filing of this brief by filing a general consent for amicus briefs with the Court. No counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than *amicus curiae*, its members, or its counsel made a monetary contribution to the preparation or submission of the brief.

INTRODUCTION

Amicus curiae, the Nevada IP Section, submits this brief to convey the importance of the following issues: (a) contrary to the patent and copyright clause of the Constitution, the "machine or transformation" test improperly excludes useful arts from Section 101, making a policy decision that is for Congress to decide, not the Judiciary; and (b) the "machine or transformation" test will harm Nevada's business and entrepreneurial activity.

Several other fellow *amici* have filed briefs referencing the patent and copyright clause of the Constitution granting Congress the power: "To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." U.S. Const. art. I, § 8, cl. 8 ("Patent and Copyright Clause"). However, this brief emphasizes the fact that unlike other powers granted to Congress, the Patent and Copyright Clause includes specific parameters for the content of copyright and patent law. For over 200 years, Congress has enacted statutes in accordance with such granted powers and has made the decision to provide exclusivity opportunity for discoveries in the useful arts generally, subject to very limited exclusions.

Unfortunately, the Federal Circuit's en banc decision in *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008), improperly excludes useful arts from Section 101. Notably, the Federal Court failed to identify or recognize any action taken by Congress which would support its drastic exclusion. Congress has made its intent and direction clear with respect to the broad scope that should apply to Section 101. For example: (a) Section 100(b), which was concurrently enacted with Section 101, includes a broad definition of "process" and (b) the recently enacted Section 273 repeatedly states the understanding of Congress that "a method of doing or conducting business" is patentable, even setting forth a limited infringement defense in certain circumstances related to a patented method. In this case, the Federal Circuit not only contradicts the clear Congressional intent and direction, but also attempts to make a policy decision that, based upon the Patent and Copyright Clause, is reserved for Congress, not the Judiciary.

Further, from a very practical perspective, the fulfillment of the Patent and Copyright Clause is necessary for the vitality of economic development in Nevada. Nevada continues to be a developing state which seeks to encourage business and entrepreneurial activity. This business and entrepreneurial activity includes new technology ventures related to renewable energy and gaming, all of which depend upon strong patent and other intellectual property protections. Patents are an essential part in procuring funding and other support for such business and entrepreneurial activity. Based in part upon the practical experience of members of the Nevada IP Section, the Nevada IP Section strongly believes that Nevada's business and entrepreneurial activity will be negatively impacted if the "machine or transformation" test is upheld. At the very least, such a significant shift from the

Framers' intent ought to be a policy decision for Congress to make, not the courts.

Accordingly, with these two issues in mind, the Nevada IP Section encourages this Court to reverse the "machine or transformation" test. Further, the Nevada IP Section encourages this Court to adopt the position identified by Federal Circuit Judge Rader in the dissenting opinion that "*Bilski* attempts to patent an abstract idea" and therefore affirm the rejection by the United States Patent and Trademark Office, Patent Appeals and Interferences ("Board"). *In re Bilski*, 545 F.3d at 1015 (Rader, J., dissenting). Alternatively, the Nevada IP Section encourages this Court to remand the matter for reconsideration in light of the reversal of the "machine or transformation" test.

I. CONTRARY TO THE PATENT AND COPYRIGHT CLAUSE, THE "MACHINE OR TRANSFORMATION" TEST IMPROPERLY EXCLUDES USEFUL ARTS FROM SECTION 101, MAKING A POLICY DECISION THAT IS FOR CONGRESS TO DECIDE, NOT THE JUDICIARY

A. The Unique, Constitutionally Express Purpose of the Patent And Copyright Clause Is "To Promote the Progress of Science and Useful Arts" Generally

The Patent and Copyright Clause of the Constitution provides that Congress shall have the power: "To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." U.S. Const. art. I, § 8, cl. 8. "'[U]nlike other enumerated [Constitutional] powers, which denominate a sphere of authority and leave the details to Congress, [this] Clause includes specific parameters for the content of the copyright [and patent] law.'" Note, *Copyright, Congress, and Constitutionality,* 79 Notre Dame L. Rev. 2115, 2119 (2004) (*quoting* M. Hamilton, *The Historical and Philosophical Underpinnings of the Copyright Clause,* 5 Occasional Papers in Intellectual Property from Benjamin N. Cardozo School of Law, Yeshiva U. 8 (1999)).

> The clause is both a grant of power and a limitation. This qualified authority, unlike the power often exercised in the sixteenth and seventeenth centuries by the English Crown, is limited to the promotion of advances in the "useful arts." It was written against the backdrop of the practices -- eventually curtailed by the Statute of Monopolies -- of the Crown in granting monopolies to court favorites in goods or businesses which had long before been enjoyed by the public. See Meinhardt, *Inventions, Patents and Monopoly*, pp. 30-35 (London, 1946). . . . Innovation, advancement, and things which add to the sum of useful knowledge are inherent requisites in a patent system which by constitutional command must "promote the Progress of . . . useful Arts." This is the *standard* expressed in the Constitution, and it may not be ignored.

Graham v. John Deere Co., 383 U.S. 1, 5-6, 86 S. Ct. 684, 687-88, 15 L. Ed. 2d 545 (1966) (emphasis in original). *Accord Eldred v. Ashcroft,* 537 U.S. 186, 212, 123 S. Ct. 789, 785, 154 L. Ed. 2d 683 (2003), ("The 'constitutional command,' we have recognized, is that Congress, to the extent it enacts copyright laws at all, create a 'system' that 'promote[s] the Progress of Science.' *Graham*, 383 U. S. at 6.") *Cf. Diamond v. Chakrabarty,* 447 U.S. 303, 315, 100 S. Ct. 2204, 2211, 65 L. Ed. 2d 144 (1980) ("congressional objectives [of the patent laws] require broad terms.")

The intent and words of the Patent and Copyright Clause included no objective to exclude particular sciences or useful arts. *Id.* Rather, through this Patent and Copyright Clause *per se* the Framers sought to foster "Science and useful Arts" generally, and to thereby foster the expansion of human knowledge and the welfare of the nation generally. *Id.*

For example, several months before enactment of the first Patent Act, President George Washington explained in his first address to the joint session of Congress on January 8, 1790:

> The advancement of agriculture, commerce, and manufactures, by all proper means, will not, I trust, need recommendation, but I cannot forbear intimating to you the expediency of giving effectual encouragement, as well to the introduction of new and useful inventions from abroad, as to the exertions of skill and genius in producing them at home .... Nor am I less persuaded that there is nothing which can better deserve your patronage than the promotion of science and literature.

Gregory A. Stobbs, *Software Patents* 13 (2d ed. 2000).

Similarly, in 1789 Thomas Jefferson wrote to James Madison that he supported a granting of "Monopolies" to "persons for their own productions in literature and their own inventions in the arts . . . ." 5 *Writings of Thomas Jefferson* 113 (Paul L. Ford Ed. 1895). Later Jefferson wrote: "Certainly an inventor ought to be allowed a right to the benefit of his invention for some time. . . . Nobody wishes more than I do that ingenuity should receive a liberal encouragement." Letter from Thomas Jefferson to Oliver Evans (May 1807), *reprinted in* 5 *Writings of Thomas Jefferson* 75-76 (A.A. Lipscomb & A.E. Berg. Eds. 1903).

Thus, as this Court explained in *Mazer* v. *Stein,* 347 U.S. 201, 219, 98 L. Ed. 630, 74 S. Ct. 460 (1954):

> The economic philosophy behind the clause empowering Congress to grant patents and copyrights is the conviction that encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of authors and inventors in 'Science and useful Arts.'

See also Note, *supra,* at 2119-25; L. Patterson, C. Joyce, *An Essay Concerning The Founders' View of the Copyright Power Granted to Congress in Article I, Section 8, Clause 8 of the U.S. Constitution*, 52 Emory L. J. 909, 936-940 (Spring 2003).

B. As Enacted, the Goal of the Patent Laws Must Be To Promote the Progress of Science and Useful Arts Generally, Subject to Action By Congress Under Applicable Countervailing Constitutional Powers

That the Patent and Copyright Clause speaks in terms of promoting science and useful arts generally does not mean that, as passed by Congress, the patent laws must provide inventors with exclusive rights in all categories of science and discoveries all the time. Congress may declare particular types of inventions unpatentable in the exercise of other constitutional powers. *Cf.* 42 U.S.C. § 2181(a) (exempting from patent protection inventions that are useful solely in connection with special nuclear material or atomic weapons). In addition:

> Within the limits of the constitutional grant [set forth in the Patent and Copyright Clause], the Congress may, of course, implement the stated purpose of the Framers by selecting the policy which in its judgment best effectuates the constitutional aim. This is but a corollary to the grant to Congress of any Article I power. *Gibbons v. Ogden*, 9 Wheat. 1, 6 L. Ed. 23 [(1824)].

Graham, 383 U.S. at 6, 86 S. Ct. at 688. *Accord Chakrabarty*, 447 U.S. at 315, 100 S. Ct. at 2211

(1980) ("Congress, not the courts, must define the limits of patentability.")

Consequently, although it is for Congress to determine (i) which arts are useful or promoted by the grant of patents (*see Chakrabarty,* 447 U.S. at 314-18, 100 S. Ct. at 2210-12) and (ii) the period of "limited time" for exclusivity provided by the copyright laws (*Eldred,* 537 U.S. 212, 123 S. Ct. at 784-85), "Congress may not create patent monopolies of unlimited duration, nor may it authorize the issuance of patents whose effects are to remove existent knowledge from the public domain, or to restrict free access to materials already available.'" *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 146, 109 S. Ct. 97, 103 L. Ed. 2d 118 (1989) (*quoting Graham,* 383 U.S. at 6, 86 S. Ct at 688).

In essence, consistent with the Framers' express intent and directive that Congress has the power "to promote the Progress of Science and the useful Arts" generally, the patent laws must be enacted to achieve that end, subject to countervailing actions by Congress under other applicable constitutional powers. U.S. Const. art. I, § 8, cl. 8. Although it is Congress that is to "select the policy which in its judgment best effectuates the constitutional aim," that aim "by constitutional command must 'promote the Progress of . . . useful Arts.' This is the standard expressed in the Constitution, and it may not be ignored." *Graham,* 383 U.S. at 6, 86 S. Ct. at 688. *Cf. Chakrabarty,* 447 U.S. at 315, 100 S. Ct. at 2210 ("the constitutional and statutory goal of the patent laws is "promoting 'the progress of science and the useful arts' with all that means for the social and economic benefits envisioned by Jefferson.")

Ever since their inception 220 years ago, the federal patent statutes have provided exclusivity for discoveries in "any" useful arts subject to very limited exclusion for purposes of national defense and security. *See Chakrabarty,* 447 U.S. at 308-09, 318, 100 S. Ct. at 2207-08, 2211. The first Patent Act of 1790 defined statutory subject matter to include "*any useful art,* manufacture, engine, machine, or device, or any improvement therein not before known or used." 1 Stat. 109, 110 (emphasis added).

> The Patent Act of 1793, authored by Thomas Jefferson, defined statutory subject matter as '*any* new and *useful art,* machine, manufacture, or composition of matter, or *any* new or useful improvement [thereof].' Act of Feb. 21, 1793, 1, 1 Stat. 319. The Act embodied Jefferson's philosophy that 'ingenuity should receive a liberal encouragement.' 5 *Writings of Thomas Jefferson* 75-76 (Washington ed. 1871). *See Graham v. John Deere Co.*, 383 U.S. 1, 7 -10 (1966). Subsequent patent statutes in 1836, 1870 and 1874 employed this same broad language. In 1952, when the patent laws were recodified, Congress replaced the word

> '*art*' with '*process*' but otherwise left Jefferson's language intact.

Chakrabarty, 447 U.S. at 309, 100 S. Ct. at 2007-08 (emphasis added, insertion in original).

In 1952, however, the term "process" meant "[a] procedure . . . [a] series of actions, motions, or operations definitely conducing to an end, whether voluntary or involuntary." ***Webster's New International Dictionary of the English Language*** 1972 (2d ed. 1952). Moreover, 35 U.S.C. 100(b), enacted along with Section 101, made clear that this broad scope of meaning for "process" in 1952 applied to Section 101: "The term 'process' means *process, art or method*, and includes a new use of a known process, machine, manufacture, composition of matter, or material." (Emphasis added.) Thus, the substitution of the term "process" for "art" in Section 101 did not exclude any useful art from the scope of patentable subject matter (nor is the expansive definition of the term "process" in Section 100(b) "unhelpful given that the definition itself uses the term 'process.'" *Bilski,* 545 F. 2d at 951 n.3).

On the contrary:

> The subject-matter provisions of [Section 101] have been cast in broad terms to fulfill the constitutional and statutory goal of promoting "the Progress of Science and the useful Arts" with all that means for the social and economic benefits envisioned by

> Jefferson. Broad general language is not necessarily ambiguous when congressional objectives require broad terms.

Chakrabarty, 447 U.S. at 315, 100 S. Ct. at 2210.

If there were any ambiguity about the scope of Section 101, the guide for its interpretation should be the express intent of Congress in light of the Constitutional purpose of the Patent and Copyright Clause

> Congress has performed its constitutional role in defining patentable subject matter in 101; we perform ours in construing the language Congress has employed. In so doing, our obligation is to take statutes as we find them, guided, if ambiguity appears, by the legislative history and statutory purpose.

Chakrabarty, 447 U.S. at 315, 100 S. Ct. at 2210.

Under the guide of Congressional intent and the broad purpose for the patent laws under the Patent and Copyright Clause, the scope of statutory subject matter under Section 101 includes anything made by mankind:

> in order to determine [the] meaning [of Section 101] *we may not be unmindful* of the Committee Reports

> accompanying the 1952 Act which inform us that Congress intended statutory subject matter to 'include anything under the sun that is made by man.' S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H. R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952).

Diamond v. Diehr, 450 U.S. 175, 182, 101 S. Ct. 1048, 1055, 67 L.Ed.2d 155 (1981) (emphasis added). *Accord Chakrabarty,* 447 U.S. at 308-10, 100 S. Ct. at 2207-08 (interpreting Section 101 broadly "in [the] light" of the same Congressional intent). *Cf. J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred International, Inc.,* 534 U.S. 124, 130, 135, 122 S.Ct. 593, 598, 600,151 L.Ed.2d 508 (2001) (Section 101 is "extremely broad" and a "dynamic provision designed to encompass new and unforeseen inventions").

Finally, the subsequent enactment of 35 U.S.C. § 273 yet again confirmed the intent of Congress for the broad scope of Section 101 found by this Court in *Chakrabarty* and *Diehr*. 447 U.S. at 308-10, 100 S. Ct. at 2207-08; 450 U.S. at 182, 101 S. Ct. at 1055. Section 273 repeatedly states the understanding of Congress that "a method of doing or conducting business" is patentable and sets forth a limited infringement defense based on prior use of such a patented method before the filing date of the patent covering the method. 35 U.S.C. § 273(1), (2), & (3). Section 273 does not include the term "process" and yet it expressly states Congress's understanding that methods of doing or conducting business are patentable subject matter under Section 101. In passing Section 273, Congress thus confirmed (i) the broad breadth of Section 101 according to its literal meaning when enacted in 1952 along with Section 100(b) and (ii) the intent of Congress in 1952 to have Section 101 embrace "anything under the sun that is made by man." *Chakrabarty,* 447 U.S. at 308-10, 100 S. Ct. at 2207-08; *Diehr,* 450 U.S. at 182, 101 S. Ct. at 182. *Cf. J.E.M.,* 534 U.S. at 135, 122 S.Ct. 600 (Section 101 is a "dynamic provision designed to encompass new and unforeseen inventions").

This consistent pattern of Congressional action since the patent and copyright laws were first enacted in 1790 shows that Congress has itself understood and implemented the directive of the Patent and Copyright Clause *per se* that the patent laws should foster science and the useful arts generally – that is, subject to policy action by Congress within the scope of this Constitutional directive. [2]

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[2] In *Diehr,* this Court interpreted the term "process" in Section 101 according to a narrower definition from a Supreme Court decision 75 years before Congress enacted Sections 101 and 100(b). *Diehr,* 450 U.S. at 182-83, 101 S. Ct. at 1054-55 (*quoting Cochrane v. Deener,* 94 U.S. 780, 787-788, 24 L.Ed. 139 (1877)). In *Diehr,* however, the physical vulcanization process at issue even satisfied the narrower meanings of the term "process" from 75 years earlier. 450 U.S. at 182-84, 101 S. Ct. at 1054. Thus, the Court in *Diehr* did not address the full meaning of "process" in Section 101 in light of: the intent of Congress for the full scope of Section 101 acknowledged in *Diehr* itself and the Court's prior *Chakrabarty* decision; the 1952 definition of "process" generally and in Section 100(b) in

C. The "Machine or Transformation" Test Nevertheless Interprets Section 101 to Exclude Innovative Useful Arts of the 21st Century and Beyond

As recognized by the Federal Circuit dissents in *Bilski*, the majority's "machine or transformation" test improperly eliminates from patentable subject matter under Section 101 many types of undeniably new and useful arts "made by man" in the 21st Century including computing systems, medical technology, and business processes.

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particular; applicable rules of statutory construction recognized in *Diehr* itself; and the express purpose of the Patent and Copyright Clause. *Compare id. with* main text *supra* at 5-15. In addition, as support for use of a narrow definition of "process," *Diehr* cited as direct support *Gottschalk v. Benson*, 409 U.S. 63, 93 S. Ct. 253, 34 L.Ed.2d 273 (1972); but the Court in *Benson* explained that it did not so hold:

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing.' *We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.* It is said that the decision precludes a patent for any program servicing a **computer**. We do not so hold. . . . . It is said we freeze process patents to old technologies, leaving no room for the revelations of the new, onrushing technology. *Such is not our purpose.*

Compare Diehr, 450 U.S. at 184, 101 S. Ct. at 1055, *with Benson*, 409 U.S. at 63; 93 S. Ct. at 255 (emphasis added).

> The court today acts *en banc* to impose a new and far-reaching restriction on the kinds of inventions that are eligible to participate in the patent system. The court achieves this result by redefining the word "process" in the patent statute, to exclude all processes that do not transform physical matter or that are not performed by machines. The court thus excludes many of the kinds of inventions that apply today's electronic and photonic technologies, as well as other processes that handle data and information in novel ways. Such processes have long been patent eligible, and contribute to the vigor and variety of today's Information Age. This exclusion of process inventions is contrary to statute, contrary to precedent, and a negation of the constitutional mandate.

545 F. 3d at 976 (Newman, J., dissenting); see also 545 F.3d at 1014-15 (Rader, J., dissenting). See Brief of Accenture and Pitney Bowes, Inc., as *Amicus Curiae* in Support of Petitioner, at 34-37, in which the present Amicus joins.

D. The "Machine or Transformation" Test Misconstrues Section 101 Contrary to the Express Purpose of the Patent and Copyright Clause and Without the Prerequisite Exclusionary Policy Action by Congress

In its *Bilski* decision, the Federal Circuit did not cite any Congressional policy excluding any useful arts from Section 101, much less to the degree that the "machine or transformation" test would require. *Bilski*, 545 F. 3d 949-66. Nor would any such exclusion be proper given the long history of including "any" useful "arts" within the scope of patentability under all patent acts since this nation was first founded. In the case of Section 101 in particular, this history includes only express and repeated inclusionary Congressional acts and intent to have Section 101 embrace "any" useful "art" – "anything under the sun that is made by man." *Chakrabarty,* 447 U.S. at 308-10, 100 S. Ct. at 2207-08; *Diehr,* 450 U.S. at 182, 101 S. Ct. at 1055; 35 U.S.C. §§ 100(b), 101, 273.

The Federal Circuit's narrow and exclusionary interpretation of Section 101 is therefore contrary to the basic constitutional framework in which such a policy is for Congress to decide, not the courts. *Graham,* 383 U.S. at 6, 86 S. Ct. at 688; *Chakrabarty,* 447 U.S. at 318, 100 S. Ct. at 2210. The "machine or transformation" limitation imposed upon Section 101 is thus in error and should be reversed.

Particularly at this point in time (over 220 years since Congress enacted the first Patent Act), an exclusionary interpretation of Section 101 (and relatedly Sections 100(b) and 273) is also contrary to the Framer's intent for, and the directive of, the Patent and Copyrights Clause at least absent clear prior adoption by Congress of an exclusionary policy consistent with the Clause or other grant of power, *Graham*, 383 U.S. at 6, 86 S. Ct. at 688; *Accord Eldred v. Ashcroft,* 537 U.S. at 212, 123 S. Ct. at 785.

II. THE *BILSKI* HOLDING WILL NEGATIVELY IMPACT NEVADA'S BUSINESS AND ENTREPRENEURIAL ACTIVITY

A. New Technology Ventures Depend on Strong Intellectual Property Protection

Amicus Nevada IP Section has many members, including the authors, with extensive experience in technology ventures. The Nevada IP Section offers to the Court the perspective from the trenches -- that is, an experienced practitioner's view of the importance of patents for emerging technology.

> The lifeblood of essentially all companies today is their intellectual assets. In every company, those assets include the intellectual output of their employees. In traditional manufacturing environments, the

> assets may be heavily focused around technological developments and know-how. In service-oriented companies such assets may include innovative and often proprietary processes and procedures. For content-oriented companies, the intellectual assets are typically the output of the creative process and may include art, text, music and other creative materials. Woe to the company that fails to recognize and protect its assets.

Jeffrey L. Brandt, *Turning Intellectual Assets into Business Assets, in* Bruce Berman, *From Ideas to Assets: Investing Wisely in Intellectual Property* 66 (2002).

Intangible assets based on intellectual property have become a key part of business life. In concluding that the U.S. is now an "intangible economy," one commentator stated:

> Information, knowledge and other intangibles now drive economic prosperity and wealth creation. Intangible assets—worker skills and know-how, informal relationships that feed creativity and new ideas, high-performance work organizations, formal intellectual property, brand names—are the new keys to competitive advantage. The value of U.S. gross investments in intangibles has been estimated to be at

> least a trillion dollars annually, covering investments in R&D, advertising and marketing, software, financial activities and creative activities of writers, artists and entertainers. This does not even count investments in productivity-enhancing changes in business processes, education and employee training.

Kenan Patrick Jarboe, *Reporting Intangibles: A Hard Look at Improving Business Information in the U.S.* (Athena Alliance, Working Paper No. 01, April 2005).

1. Start-up Ventures Based on Emerging Technology Need Patent Protection

Patents are an essential part of securing these vital intellectual assets for emerging technology companies. For many start-up ventures, the most significant asset, or maybe the only asset, is the value of its patents. *See* Jovica Carranza, *Patent Reform and Small Business Challenges: The Importance of Patent Rights and Commercial Competition* (Council on Foreign Relations, Roundtable on Technology, Innovation, and American Primacy: The Patent Crisis - An Update April 7, 2009).

We live in a capitalistic economic system, and start-up ventures need capital. Innovators are often undercapitalized and when the funds of the innovator become depleted, start-up capital must be obtained from third party investors. Investors are interested in obtaining a return on investment. A patent for an emerging technology may serve as collateral for an investor. James E. Malackowski and David I. Wakefield, *Venture Investment Grounded in Intellectual Capital: Taking Patents to the Bank, in* Berman, *supra*, 174. Used as collateral, the patent may be the only hedge such a start-up venture has against an adverse outcome.

Before any commitment, a competent investor will thoroughly evaluate a start-up. Innovations and related patents will be vetted. Contrary to the perception of some, not just any patent will do. In a venture based upon an innovation, an effective patent is a prime determinate of acceptable risk. Christopher R. Fine & Donald C. Palmer, *Patents on Wall Street, in* Berman, *supra,* 523-526.

One critical attribute of a patent is its ability to secure innovation during development and after it enters the marketplace. H. Jackson Knight, *Intellectual Property "101", in* Berman, *supra,* 10. Without a patent, the innovation and the research and development dollars invested in commercialization of the respective subject matter are susceptible to being usurped by a waiting competitor. Moreover, the patent may create and/or represent a defined framework for the venture. The patent (or the patent application) itself may provide the definition needed to evaluate the business value and the commercial feasibility of the underlying subject matter. *See generally* Howard A. Anawalt &

Elizabeth S. Enayti, *IP Strategy, Complete Intellectual Property Planning, Access and Protection,* 290-291 & n 6. (1996).

In the same way investors need to know the innovation is protected, inventors need to have that protection provided by a broad definition of Section 101 when approaching investors. For many emerging technologies, an inventor faces the fear and real possibility that the investors can simply take the innovation without compensation to the inventor, primarily because inventors often lack the funds to commercialize the technology. Moreover, financiers may require the inventor to make a detailed disclose of the invention, trade secrets, business plans, and market plans. *See generally* Lauri J. Radding, *Investment Related Intellectual Property: Due Diligence Strategies and Concerns* 20 & App. A & B (Licensing Executives Society, Sept. 22, 2003). This circumstance may be further complicated when the best source of financing is a vendor, customer, or even a competitor, particularly when such a player is in a better position to understand, evaluate, and exploit the technology.

2. Existing Enterprises Need Patent Protection to Undertake Development of an Emerging Technology

In the case of an existing technology-based enterprise, intellectual property assets represent the bulk of their worth. Posting of Angelo J. Bufalino, *IP Strategies (Part 1)*, to IPFrontline blog, http://www.ipfrontline.com/depts/article.asp?id=3698

&deptid=3 (May 25, 2005). Innovation requires that significant capital be allocated to research and development. That capital may come from internal resources, outside investors, or the public markets, but the technology must generate a return on investment. New technology must be protectable from its initial development through to commercialization.

The structure of an enterprise in and of itself presents issues for technology that can only be secured by patent protection. The sheer number of people in an enterprise increases the risk that essential technology will be prematurely disclosed, that knowledgeable key players will be hired away by competitors, or that key players will break away and establish their own venture.

Another way to interpret patents in emerging technologies is that patent protection is analogous to buying futures in pure research. Patents enable companies to invest in risky "futures" with the hope of commercializing that research and thereby turn efforts in innovation into protected, monetizable business assets. *See* Brandt, *supra*, 66-80. Research and development dollars invested can provide a return both from commercializing products and from licensing, and each stream can be monetized if appropriate patents are in place.

If this Court were to adopt the "machine or transformation test", some of these emerging technologies would be excluded from protection and the inventor and/or investor would be vulnerable to attack or exploitation without appropriate remuneration.

B. Nevada Will be Harmed by Adoption of the "Machine or Transformation" Test

Nevada is a developing state that recognizes the need for the emerging technology industry. The vision of the Nevada Commission of Economic Development, the eponymous State Agency, is that "... Nevada's economic platform will be driven by renewable energy, future-based technology and human ingenuity to promote new business opportunity in every community." Nev. Comm'n Econ. Dev. Website, *available at* http://www.expand2nevada.com/documents/FY10%20IP.pdf. To encourage the development of emerging technologies within the State, a partial abatement of sales tax, modified business tax and personal property tax is available to qualified intellectual property development companies. NRS 360.750(2)(g). Also noteworthy is that the Nevada Legislature mandated that by 2015 twenty percent (20%) of the energy in Nevada should be from renewable energy sources. NRS § 704.7831.

Nevada is blessed with some of the most abundant solar energy resources of any state in the nation, and has the second most abundant Geothermal Energy Resources of any state in the nation. USGS, Assessment of Moderate- and High-Temperature Geothermal Resources of the United States, Fact Sheet (2008). Nevada is the No. 1 state in the nation in solar watts per capita and solar as a percentage of retail sales. Nevada Energy website, *available at* http://www.nvenergy.com/renewablesenvironment/renewables/. Nevada has the largest solar photovoltaic project in the country. *Id.* Nevada Solar One is the largest solar thermal energy plants built in the world since 1991. U.S. Department of Energy, *Office of Efficiency and Renewable Energy, Solar Energies Technologies Program* (September 2008) *available at* http://www.nrel.gov/csp/pdfs/43685.pdf. Nevada is the worldwide capital of the gaming industry and gaming constitutes a large part of Nevada's economy. Software technology needed to support gaming and technology sectors throughout the State continues to develop and grow. Nevada's early adoption of fiber-optic technology, including expansive networks of ISDN and other large volume digital transmission infrastructures - along with digital switching - have made the State one of the most sought-after locations in the West. Nev. Comm'n Econ. Dev. website, *available at* http://www.expand2nevada.com/telecommunications.html.

Each of these industries uses technology that would be excluded from patentability if the *Bilski* "machine or transformation" test is adopted. *See e.g.*, James Jorasch, *The Process Laboratory, in* Berman, *supra*, 142-45. Without patent protection for these new, intangible technologies and others impacted by the test, Nevada will be at a disadvantage in terms of economic growth. *See generally* Robert J. Shapiro & Kevin A. Hassett, *The Economic Value of*

Intellectual Property (Sonecon, Intellectual Property Report Oct. 2005), *available at* http://www.sonecon.com/docs/studies/IntellectualPropertyReport-October2005.pdf. Nevada businesses will have an unfair disadvantage competing with businesses in states that already have a market advantage in established intangible technologies. Nevada will also be disadvantaged in attracting new technology as against other jurisdictions that allow protection for that technology. This is exactly the opposite of what the Framers intended for the patent system to accomplish as explained above, *supra* at 5-8.

CONCLUSION

The "machine or transformation" test should not be the law for a great number of reasons explained in the briefing before this Court, including because Congress has adopted no such policy and such a decision is for Congress, not the courts. *Graham,* 383 U.S. at 6, 86 S. Ct. at 688; *Chakrabarty,* 447 U.S. at 318, 100 S. Ct. at 2210. Consistent with the Patent and Copyright Clause the Court should interpret Section 101 to include any useful process, art, or method as expressly stated in and intended by Sections 100(b), 101, and 273.

Further, the Court should affirm the rejection of the Board on the basis that the patent claims in issue attempt to patent an abstract idea. *Bilski,* 545 F.3d at 1011, 1013 (Rader, J., dissenting). Alternatively, this Court should reverse the "machine or transformation" test and remand the case to the Federal Circuit for reconsideration in view of reversal of the "machine or transformation" test.

Respectfully submitted,

Charles Dominick Lombino
Lombino Law Studio, Ltd
2421 Enchantment Circle
Henderson, Nevada 89074
(702) 357-8620

Bryce K. Earl
Counsel of Record
Santoro, Driggs, Walch Kearney, Holley & Thompson
400 South Fourth Street
Third Floor
Las Vegas, Nevada 89101
(702) 791-0308

Robert C. Ryan*
Holland & Hart LLP
5441 Kietzke Lane
Second Floor
Reno, Nevada 89511
(775) 327-3000

**Counsel of Record*

Counsel for Amicus Curiae

AMICUS
CURIAE
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BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,
v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR, PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari
to the United States Court of Appeals
for the Federal Circuit

BRIEF AMICUS CURIAE OF INTERNATIONAL BUSINESS MACHINES CORPORATION IN SUPPORT OF NEITHER PARTY

MARC A. EHRLICH
MANNY W. SCHECTER
MARIAN UNDERWEISER
IBM CORPORATION
One North Castle Dr.
Armonk, NY 10504
(914) 765-4260

CATHERINE E. STETSON *
JESSICA L. ELLSWORTH
HOGAN & HARTSON LLP
555 Thirteenth St., N.W.
Washington, D.C. 20004
(202) 637-5491

* Counsel of Record

Counsel for Amicus Curiae

[Additional counsel on inside cover.]

BOTH 4XD2LT

8559

Additional Counsel:

KENNETH R. CORSELLO
IBM CORPORATION
1101 Kitchawan Rd.
Yorktown Heights, NY 10598
(914) 945-2631

RANDALL BLUESTONE
VAN N. NGUY
IBM CORPORATION
650 Harry Rd.
San Jose, CA 95120
(408) 927-3386

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IN THE
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Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

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BRIEF AMICUS CURIAE OF INTERNATIONAL BUSINESS MACHINES CORPORATION IN SUPPORT OF NEITHER PARTY

STATEMENT OF INTEREST OF AMICUS CURIAE[1]

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[1] Pursuant to Sup. Ct. R. 37.6, amicus notes that no counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than amicus curiae, its members, or its counsel made a monetary contribution to its preparation or submission. Petitioners and Respondents have consented to the filing of this

International Business Machines Corporation (IBM) is a globally recognized leader in the field of information technology research, development, design, manufacturing, and related services. During IBM's nearly 100-year history, its employees have included five Nobel laureates, five National Medal of Science recipients, and seven winners of the National Medal of Technology. The United States Patent and Trademark Office (PTO) has granted IBM tens of thousands of United States patents, including more patents than any other corporate assignee for the past sixteen years. IBM has filed amicus briefs in other cases before the Court involving interpretation of the patent laws. *See, e.g.*, *Quanta Computer, Inc.* v. *LG Electronics, Inc.*, 128 S. Ct. 2109 (2008); *KSR Int'l Co.* v. *Teleflex Inc.*, 550 U.S. 398 (2007); *eBay Inc.* v. *MercExchange, LLC*, 547 U.S. 388 (2006).

In light of its sizeable patent portfolio and diverse business interests, IBM can provide a balanced view of the patentability standard under 35 U.S.C. § 101—particularly as it relates to the patenting of software and business method related inventions. As a leading recipient, licensee, and licensor of patents, IBM has a compelling interest in the development of clear and consistent rules governing subject matter patentability and is committed to maintaining the integrity of the United States patent laws—and the quality of patents themselves. IBM has frequently been involved in patent litigation, both as a patentee seeking to enforce its patent rights and as an accused infringer defending itself against others' claims. As a major force in the information technology industry,

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brief through blanket consent letters filed with the Clerk's Office.

IBM has firsthand knowledge of the critical role the patent laws have played over the last few decades in software and information technology research and development.

This case presents the question whether a nontechnological business method is patentable subject matter. But the Federal Circuit's opinion has needlessly created confusion regarding the patentability of software—the computer-readable code embodying functionality in virtually every modern information technology system or device. Software is the means by which we use our computers to do word processing, send email and surf the Web; it enables our cellphones to connect to wireless networks; it allows air traffic controllers to safely schedule the arrival and departure of flights; and it permits physicians to diagnose and treat illnesses. Software is, in short, a fundamental, and increasingly indispensable, technological innovation.

In the months since the Federal Circuit issued its opinion, and to IBM's great concern, a number of administrative and judicial decisions have rigidly applied the "machine or transformation" test to question—in some cases explicitly—the patentability of software per se. Software technology is vital in addressing society's most pressing challenges. IBM is committed to ensuring that such technology is and remains patentable.

INTRODUCTION

Two Terms ago, in *KSR International Co.* v. *Teleflex Inc.*, 550 U.S. 398 (2007), this Court rejected the Federal Circuit's "rigid" test for obviousness under Section 103 of the Patent Act in favor of a "flexible" and "functional" approach that returned the analysis to the underlying principles of the Court's prior decisions on obviousness. *Id.* at 415, 417. As the Court explained, the Federal Circuit erred in transforming "[h]elpful insights" and "general principle[s]" from this Court's prior case law into a "rigid and mandatory formula[ ]" and a "formalistic conception" for determining obviousness. *Id.* at 419.

This case presents a similar situation, and the Court's guidance again is needed—this time to return the Section 101 patentability inquiry to a flexible, functional approach that values substance over form in assessing patentability. The Court has long and often recognized that " 'the primary purpose of our patent laws is not the creation of private fortunes for the owners of patents but is "to promote the progress of science and the useful arts," ' " *Quanta Computer*, 128 S. Ct. at 2116 (quoting *Motion Picture Patents Co.* v. *Universal Film Mfg. Co.*, 243 U.S. 502, 518 (1917) (quoting U.S. Const., art. I, § 8, cl. 8)).[2] Determining what kinds of inventions the patent laws protect is critical to properly promote innovation and balance the rights of inventors and the public. The Federal Circuit's splintered decision in this case reflects that court's considerable struggle to settle on a "test" to distinguish patentable subject matter from what this Court and the patent community have long agreed are unpatentable fundamental principles, namely:

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[2] Article I, § 8, cl. 8 of the U.S. Constitution grants Congress the power "[t]o promote the Progress of Science and the useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." U.S. Const., art. I, § 8, cl. 8.

laws of nature, natural phenomena, mental processes, and abstract ideas. But the Federal Circuit's narrow view that a single formalistic test determines whether any process constitutes patentable subject matter—a test asking whether a claimed process is tied to a particular machine or transforms a particular article into a different state or thing, Pet. App. 12a—is just the sort of rigid approach this Court rejected in *KSR*.

The proper analysis—as in *KSR*—is one that examines the substance of the invention in view of the purpose of the patent laws. In this case, the substantive approach is to determine if the claimed process provides a technological contribution and thus advances the "useful arts," without preempting the use of laws of nature, natural phenomena, mental processes, or abstract ideas. Such an approach will protect the application of fundamental principles in inventions that serve the constitutional purpose of promoting the useful arts, while avoiding removal of these principles from the "storehouse of knowledge of all men." *Funk Bros. Seed Co.* v. *Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948).

SUMMARY OF ARGUMENT

Section 101 is the gatekeeper of the patent system. It establishes the threshold requirement that claims be drawn to patentable subject matter, which it states are "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." 35 U.S.C. § 101. The constitutional purpose of the patent system and this Court's precedents establish two key limitations on patentability: Inventions which do not involve technological contributions are outside the scope of patentable subject matter, as are laws of nature, natural phenomena, mental processes, and abstract intellectual ideas. Theoretical or abstract discoveries thus are excluded from patent protection.

The machine-or-transformation test is a useful analytical tool to determine whether a claimed process impermissibly preempts a fundamental principle and is thus unpatentable. But it would be a mistake for courts to rely *only* on the machine-or-transformation test when assessing an invention's patentability, because the test diverts the inquiry from the central question whether the substance of the invention provides a technological contribution and instead focuses on the form of the claim. If applied as the exclusive test for determining the patentability of all processes, the machine-or-transformation test will result (and is already resulting) in both false positives and false negatives—and will be readily circumvented by clever patent drafters. Consistent with the purpose of the patent system, the initial and potentially dispositive inquiry must *always* be whether the claimed process makes a technological contribution to the useful arts.

This case presents the Court an opportunity to clarify the requirements for subject matter patentability. Petitioner Bilski's claims were directed to a nontechnological business method; but the Federal Circuit's machine-or-transformation test has put in play the issue of subject matter patentability of software. In view of the critical importance of software innovation, this Court should confirm that software is a technological field and that software inventions are patentable.

Information technology systems powered by software are pervasive. From the systems that protect our national security,[3] control modern transportation,[4] and help doctors perform precision surgery,[5] to the systems that run our cars,[6] cellphones,[7] and of course our personal computers, our everyday lives are in countless ways enabled and enhanced by information technology systems. And it is the software in these systems that increasingly contains their functionality.

This case thus requires the Court to strike a balance between the technological and nontechnological arts, embracing broad patentability for the former while excluding the latter from patentability. The question on which that balance turns is whether a process provides a technological contribution. Patenting technological inventions promotes innovation. No sound patent policy supports protection for non-technological processes, including non-technological business methods.

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[3] *See, e.g.*, Dep't of Homeland Security, *The National Strategy to Secure Cyberspace* (Feb. 2003), *available at* http://www.dhs.gov/xlibrary/assets/National_Cyberspace_Strategy.pdf.

[4] *See, e.g.*, Dep't of Transportation, *U.S. Department of Transportation Announces Computer Software to Improve Transportation Decisions*, (Oct. 2, 2000), *available at* http://www.dot.gov/affairs/fhwa6300.htm; Heinz Erzberger, *Transforming the NAS: The Next Generation Air Traffic Control System, NASA* (2004), *available at* http://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20050110294_2005093599.pdf.

[5] *See, e.g.*, Isabelle M. Germano, *Advanced Techniques in Image-Guided Brain and Spine Surgery* 49 (2002).

[6] *See, e.g.*, M. Broy, *Challenges in Automotive Software Engineering*, International Conference on Software Engineering, Association for Computing Machinery (2006).

[7] *See, e.g.*, *Blackberry Operating System Downloads, available at* http://www.blackberryfaq.com/index.php/BlackBerry_Operating_System_Downloads.

ARGUMENT

I. THE PROPER INQUIRY FOR PATENTABLE SUBJECT MATTER FOCUSES ON WHETHER THE CLAIMED PROCESS MAKES A TECHNOLOGICAL CONTRIBUTION.

The Constitution does not contemplate unfettered authority to issue patents. *See* U.S. Const. art. I, § 8. Instead, the Constitution provides a "qualified authority * * * limited to the promotion of advances in the 'useful arts.' " *Graham* v. *John Deere Co.*, 383 U.S. 1, 5 (1966); *see also KSR*, 550 U.S. at 427 (reaffirming that patents are designed to promote "the progress of useful arts"). As a result, "[t]he standard of patentability is a constitutional standard[.]" *Great Atlantic & Pac. Tea Co.* v. *Supermarket Equip. Corp.*, 340 U.S. 147, 155 (1950) (Douglas, J., concurring).

Consistent with that constitutional standard, this Court's precedents over two centuries have tethered patentability to technological innovation. As the Court explained in *Pfaff* v. *Wells Electronics, Inc.*, 525 U.S. 55, 63 (1998), "the patent system represents a carefully crafted bargain that encourages both the creation and the public disclosure of new and useful advances *in technology*, in return for an exclusive monopoly for a limited period of time." (Emphasis added.)

In fact, Congress created the Federal Circuit as an exclusive appellate court for patent cases in hopes that "increased uniformity would 'strengthen the United States patent system in such a way as *to foster technological growth and industrial innovation.*'" *Markman* v. *Westview Instruments, Inc.*, 517 U.S. 370, 390 (1996) (emphasis added and citation omitted); *see also Bonito Boats, Inc.* v. *Thunder Craft Boats, Inc.*, 489 U.S. 141, 150-151 (1989) ("The federal patent system thus embodies a carefully crafted bargain for encouraging the creation and disclosure of new, useful, and nonobvious *advances in technology and design* in return for the exclusive right to practice the invention for a period of years.") (emphasis added); *Diamond* v. *Chakrabarty*, 447 U.S. 303, 316 (1980) ("Mr. Justice Douglas reminded that the inventions most benefiting mankind are those that 'push back the frontiers of chemistry, physics, and the like.'") (citation omitted); *Great Atlantic & Pacific Tea Co.*, 340 U.S. at 154-155 (Douglas, J., concurring) ("The Framers plainly did not want [patent] monopolies freely granted. *The invention, to justify a patent, had to serve the ends of science—to push back the frontiers of chemistry, physics, and the like; to make a distinctive contribution to scientific knowledge.* * * * Patents serve a higher end—*the advancement of science.*") (emphases added).[8]

Patentability has been—and must continue to be—interpreted with "'reference to [the] standard written into the Constitution.'" *Graham*, 383 U.S. at

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[8] The technological contribution standard is a constitutional one, and all discussion of that standard described in this brief is a synthesis of the requirements for subject matter patentability under U.S. patent law. The standards for subject matter patentability adopted by non-U.S. jurisdictions have no bearing on the constitutional standard that governs here.

6 (citation omitted). Thus, to be patentable, a claim must further the purpose "of advancing the useful arts—the process today called technological innovation." *Paulik* v. *Rizkalla*, 760 F.2d 1270, 1276 (Fed. Cir. 1985) (Newman, J.) (en banc); *see also* Karl B. Lutz, *Patents and Science: A Clarification of the Patent Clause of the U.S. Constitution*, 18 Geo. Wash. L. Rev. 50, 54 (1949) ("The term 'useful arts,' as used in the Constitution * * * is best represented in modern language by the word 'technology.'").[9] The "most fundamental attribute of the useful arts" is that they "relate to controlling the forces and materials of nature and putting them to work in a practical way for utilitarian ends serving mankind's physical welfare." Robert I. Coulter, *The Field of the Statutory Useful Arts, Part II*, 34 J. Patent Office Soc'y 487, 498-499 (1952).

The baseline, then, of this Court's precedent as informed by the constitutional standard of promoting the useful arts is that to be patentable subject matter, a "process" must involve a technological contribution.[10] And if the process relies on a fundamental principle—a law of nature, abstract idea, natural phenomena or mental process—that process as claimed in the patent must represent a specific application of that principle to avoid preempting all its uses. This Court's precedents over more than a century have identified these fundamental principles as belonging to humankind and not the proper subject of a patent monopoly.

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[9] *See also, e.g., In re Foster*, 438 F.2d 1011, 1014-15 (CCPA 1971) ("All that is necessary * * * to make a sequence of operational steps a statutory 'process' within 35 U.S.C. § 101 is that it be in the technological arts."); *In re Musgrave*, 431 F.2d 882, 893 (CCPA 1970) (patentable processes must "be in the technological arts so as to be in consonance with the Constitutional purpose to promote the progress of 'useful arts.'"); *see also* John R. Thomas, *The Patenting of the Liberal Professions*, 40 B.C. L. Rev. 1139, 1164 (1999) (constitutional stricture of promoting the "useful arts" is in contrast to promoting the "seven 'liberal arts' and the four 'fine arts' of classical learning.").

Pre-1952 cases. Long before the 1952 Patent Act introduced the term "process" in setting out patentable subject matter, this Court had made clear that patent protection could extend to processes.[11]

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[10] Contrary to the *Bilski* majority view, the concept of scientific or technological innovation is not an ambiguous one. As Judge Mayer pointed out, "the meaning of those terms is not particularly difficult to grasp." Pet. App. 130a (Mayer, J., dissenting). This is not to say that technology is static. Technology, by its nature, is constantly changing, and tomorrow's technological advances often seem unimaginable today. A rigid test for patentability ignores the fundamental dynamics of technological evolution that the patent laws are designed to protect.

[11] Although the Patent Act did not use the term process until 1952, "a process has historically enjoyed patent protection because it was considered a form of 'art' as that term was used in the 1793 Act." *Diamond* v. *Diehr*, 450 U.S. 175, 182 (1981). "Analysis of the eligibility of a claim of patent protection for a 'process' did not change with the addition of that term to § 101." *Id.* at 184; *see also* S. Rep. No. 82-1979, at 5 (1952) ("Th[e] language [of the predecessor provision to § 101] has been preserved except that the word 'art' which appears in the present statute has been changed to the word 'process."); *Tilghman* v. *Proctor*, 102 U.S. 707, 722 (1881) ("A manufacturing process is clearly an art, within the meaning of the law."); *Cochrane* v. *Deener*, 94 U.S. 780, 787-88 (1877) (process is patentable); *Corning* v. *Burden*, 56 U.S. (15 How.) 252, 267 (1854) (same).

But the Court's early decisions also made clear that not all processes are patentable. In 1854, for example, this Court rejected as unpatentable a process claim broadly covering the concept of transmitting messages using an electromagnetic current. *See O'Reilly* v. *Morse*, 56 U.S. (15 How.) 62, 112-113 (1854). As the Court explained, that claim was unpatentable because it would protect, and thereby preempt, all conceivable solutions to accomplish the recited result. *Id.* at 113. Morse was entitled to a patent only for the specific method of transmitting messages by way of an electromagnetic current that he actually invented—*i.e.*, his technological contribution to the useful arts. *Id.* at 117. Because it properly focused on the substance of Morse's invention and its technological character, the Court was able to distinguish between those claims that were patentable and those that were unpatentable. *See also Rubber-Tip Pencil Co.* v. *Howard*, 87 U.S. (20 Wall.) 498, 507 (1874) ("An idea of itself is not patentable, but a new device by which it may be made practically useful is."); *Le Roy* v. *Tatham*, 55 U.S. (14 How.) 156, 175 (1853) ("A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot he patented, as no one can claim in either of them an exclusive right.").[12]

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[12] The circuit courts routinely applied this first rule of patentability in holding method claims unpatentable where they make no technological contribution or preempt a fundamental principle. *See, e.g.*, *Joseph E. Seagram & Sons, Inc.* v. *Marzall*, 180 F.2d 26, 27-28 (D.C. Cir. 1950); *Loew's Drive-in Theatres, Inc.* v. *Park-In Theatres, Inc.*, 174 F.2d 547, 553 (1st Cir. 1949); *Hotel Sec. Checking Co.* v. *Lorraine Co.*, 160 F. 467, 469-472 (2d Cir. 1908).

Post-1952 cases. As part of a general revision to the patent laws in 1952, Congress substituted the term "process" for the term "art" in setting out patentable subject matter. Cases following the 1952 amendment reinforce that patentable "processes" require a technological innovation. In *Gottschalk* v. *Benson*, 409 U.S. 63 (1972), the Court held unpatentable a claimed "method for converting binary-coded decimal (BCD) numerals into pure binary numerals." *Id.* at 64. The claimed process was unpatentable because it was not "limited to any particular art or technology, to any particular apparatus or machinery, or to any particular end use," but rather "purported to cover any use of the claimed method in a general-purpose digital computer of any type." *Id.* The claimed method did not constitute a practical application of any fundamental principle and was thus ineligible for patent protection. In ruling, the Court explained that although "[i]t is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing,' " the Court declined to "hold that no process could ever qualify if it did not meet the requirements of our prior precedents." *Id.* at 71.

A few years later, in *Parker* v. *Flook*, 437 U.S. 584, 594-596 (1978), the Court held unpatentable a claimed method for computing an "alarm limit" in the conversion of hydrocarbons. This claimed process was unpatentable because it simply provided a formula for computing an alarm limit, without specifying or disclosing any relevant variables or processes at work. *Id.* at 586. As the Court explained, an application of a mathematical formula, principle, or phenomenon of nature may be patented only if "there is some other inventive concept in its application." *Id.* at 594. *Accord Mackay Radio & Tel. Co.* v. *Radio Corp. of Am.*, 306 U.S. 86, 94 (1939) ("While a scientific truth, or the mathematical expression of it, is not a patentable invention, a novel and useful structure created with the aid of the knowledge of scientific truth may be.").

Finally, in *Diehr*, 450 U.S. 175, the Court held patentable a "process for molding raw, uncured synthetic rubber into cured precision products" because the "claims were not directed to a mathematical algorithm or an improved method of calculation but rather recited an improved process for molding rubber articles by solving a practical problem which had risen in the molding of rubber products." *Id.* at 177, 181. As the Court explained, "when a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (*e.g.*, transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101." *Id.* at 192.

All of these cases reiterate that an inventor may rely on or apply a fundamental principle to achieve a specific technological innovation—but an inventor may not claim a process that would preempt all uses of that fundamental principle in subsequent technological advances.[13] "Phenomena of nature, though just discovered, mental processes and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work." *Benson*, 409 U.S. at 67; *accord Chakrabarty*, 447 U.S. at 309 ("The laws of nature, physical phenomena, and abstract ideas have been held not patentable.").

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[13] *See* Andrew A. Schwartz, *The Patent Office Meets the Poison Pill: Why Legal Methods Cannot be Patented*, 20 Harv. J. Law & Tech. 333, 357 (2007) (The "clear and consistent body of Supreme Court case law establishes that the term 'invention'

This Court has observed that it is not always easy to draw the line between patentable and unpatentable subject matter. *See Flook*, 437 U.S. at 589 ("The line between a patentable 'process' and an unpatentable 'principle' is not always clear"); *Lab. Corp. of Am. Holdings* v. *Metabolite Labs., Inc.*, 548 U.S. 124, 134 (2006) (Breyer, J., dissenting from dismissal of writ of certiorari) ("[T]he category of non-patentable 'phenomena of nature,' like the categories of 'mental processes,' and 'abstract intellectual concepts,' is not easy to define.").[14] But one unifying principle is evident: an invention must provide a technological contribution to satisfy the requirement of patentable subject matter.

This inquiry can not be addressed by a rigid formula; it must be flexible to accommodate the changing nature of innovation. Innovations that are

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encompasses anything made by man that utilizes or harnesses one or more 'laws of nature' for human benefit.").

[14] The Court has exercised great care in addressing new fields of technology—to ensure that early patents do not improperly claim a fundamental principle and thereby discourage subsequent development. *See, e.g., Flook* at 596 ("It is our duty to construe the patent statutes as they now read, in light of our prior precedents, and we must proceed cautiously when we are asked to extend patent rights into areas wholly unforeseen by Congress.").

clearly nontechnological—such as Bilski's claims to a method of hedging commodity risk—are not patentable subject matter. On the other hand, clearly technological innovations, such as the software that operates a magnetic resonance imaging (MRI) machine[15] or a word processor, are patentable subject matter.

II. THE MACHINE-OR-TRANSFORMATION TEST IS A USEFUL, BUT NOT UNIVERSALLY DISPOSITIVE, AID TO DETERMINING PATENTABILITY.

The Federal Circuit concluded that its machine-or-transformation test would "surely" determine whether a claimed process is patent-eligible under Section 101. Pet. App. 12a. While the machine-or-transformation test may, in some circumstances, be a useful analytic tool to determine whether a claimed process in fact includes a technological contribution that does not preempt a fundamental principle, it is far short of a "sure[ ]" one-size-fits-all litmus test for subject matter patentability. Enshrining this test as the sole means of determining patent eligibility would be detrimental to innovations the patent system was intended to promote. By focusing the inquiry on whether a process is tied to a particular machine or transforms a particular article to a different state or thing, the machine-or-transformation test focuses unduly on the *form* of the claimed process, which in many cases distracts from properly evaluating the *substance* of the invention for whether it makes a (patentable) technological contribution.

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[15] *See, e.g.*, Robson Macedo & David Bluemke, *New MRI Software: Nifty Spins*, Imaging Economics (Feb. 2006), *available at* http://www.imagingeconomics.com/issues/articles/2006-02_02.asp.

Consider, for example, the patent claim at issue in this case. If Bilski had merely added that the "risk hedging" method is performed on a computer, this would not appear to change the nature of the invention; the method remains unpatentable subject matter because it makes no technological contribution. The machine-or-transformation test, however, directs the focus to the arbitrarily added computer, diverting attention away from what should be the substantive inquiry into whether the inventive process provides a technological contribution. *See also Diehr*, 450 U.S. at 192 (warning against "allow[ing] a competent draftsman to evade the recognized limitations on the type of subject matter eligible for patent protection").

The Section 101 inquiry therefore should remain focused on the overall purpose of the patent system: to protect technological advances. *See General Elec. Co.* v. *Jewel Incandescent Lamp Co.*, 326 U.S. 242, 249 (1945) (invention is unpatentable if it "d[oes] not advance the frontiers of science in this narrow field so as to satisfy the exacting standards of our patent system"). The initial inquiry for patentability should be whether the claimed process signifies a useful technological advance, with the machine-or-transformation test as a subordinate inquiry in appropriate instances. Using the machine-or-transformation test as anything more than a useful analytic tool to assist in evaluating whether a non-preemptive technological innovation is present will "risk[ ] hobbling" advances like software technology and imperil "patent protection for tomorrow's technologies." Pet. App. 143a (Rader, J., dissenting). As this Court stated in *KSR*, application of the patent laws "must not be confined within a test or formulation too constrained to serve its purpose." 550 U.S. at 427.

III. SOFTWARE INVENTIONS THAT MAKE TECHNOLOGICAL CONTRIBUTIONS ARE PATENTABLE.

The invention before the Court is directed to a method of hedging commodity risk, a nontechnological business method. But the Federal Circuit's opinion addresses much more: "what test or set of criteria governs the determination * * * as to whether a claim to a process is patentable under § 101 or, conversely, is drawn to unpatentable subject matter because it claims only a fundamental principle." Pet. App. 8a. And when that court assessed Bilski's claims and found them wanting, it drew on its own precedents in a variety of fields—including information technology. *See* Pet. App. 22a (citing, among others, *In re Abele*, 684 F.2d 902, 903 (CCPA 1982) (invention in the field of image processing "particularly as applied to computerized axial tomography or CAT scans"). It accordingly is not particularly surprising that in subsequent proceedings before the Board of Patent Appeals and Interferences (the "Board") and in the federal district courts, the machine-or-transformation test has been automatically applied to information technology inventions—with a particular critical focus on software. *See, e.g.*, *Ex Parte Petculescu*, No. 2008-2859, 2009 WL 1718896, at * 7 (BPAI June 4, 2009) (rejecting software per se claims on the basis that "[b]ecause the software does not transform a tangible article, the claims do not recite statutory subject matter" and the claims "fail the machine-or-transformation test, and are not patent-eligible process claims"); *Ex parte Mazzara*, No. 2008-4741, 2009 WL 291178, at *12 n.3 (BPAI Feb. 5, 2009) ("No portion of this decision should be interpreted as holding that claims to computer software, *per se*, are deemed to be directed to patentable subject matter under 35 U.S.C. § 101.").

The Federal Circuit's test has thus precipitated confusion, as the Board and the courts struggle to determine the subject matter patentability of software in cases that heretofore would have been properly and easily recognizable as technological (and thus presumptively patentable subject matter). This sudden and unjustified removal of clearly technological inventions from patentability cannot be tolerated.

Software is the means through which innovation is expressed in the Information Age; it is "the new physical infrastructure of the information age." *Report to the President, "Information Technology Research: Investing in Our Future,"* President's Information Tech. Advisory Comm. (PITAC), Nat'l Coordination Office for Computing, Info. & Commc'ns (1999).[16] We rely daily on software embedded in everything from computers to automobiles to cell phones to security and medical equipment for our continued health, safety, employment, communication, and social interaction. And it is through software that we are able to take on the major challenges confronting our modern networked world—including those presented by climate change, supply chains for food and medicine, security concerns ranging from identity theft to terrorism, and the management of financial systems.

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[16] Not only does software perform the functions once the province of electrical and mechanical systems, but the field of software technology has created *new* vistas of technological innovation that have no analog in their predecessor technologies. For example, a software-controlled electronic fuel injection system has replaced, and now performs more efficiently the function of, carburetors in our vehicles. And software that performs data mining, *see, e.g.*, U.S. Patent No.

A few examples are illustrative. To combat the wide range of security threats confronting their constituents, governments are implementing advanced security systems based on sophisticated software to perform tasks such as license plate recognition, trending analysis, and intelligent searching. These systems allow officials to monitor from a central system everything from daily traffic patterns to suspicious activities and broader public safety concerns.[17]

Air traffic control systems also employ sophisticated software to process information received from multiple inbound and outbound aircraft including location, altitude, and speed; to

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6,094,651 "Discovery-driven exploration of OLAP data cubes," is a new technological innovation with no hardware analog.

[17] *See, e.g.*, W. David Gardner, *Chicago Taps IBM, Firetide to Install "Operation Virtual Shield,"* InformationWeek (Sept. 27, 2007), *available at* http://www.informationweek.com/news/mobility/security/showArticle.jhtml?articleID=202102357; Jim McKay, *Police Tout License Plate Recognition Systems as the Next Big Thing Government Technology* (May 12, 2008), *available at* http://www.govtech.com/gt/273037.

monitor weather patterns; and to feed this data to advanced collision avoidance software systems.[18]

Software also enables more efficient resource usage. We typically extract only 1/3 of the oil in an existing reserve using current technology. Software imaging techniques enable real-time 3-D models of oil reservoirs, reducing guesswork and increasing output.[19]

Consider, too, software contributing to our Nation's financial security. Under the Patriot Act, financial institutions are required to assess the risk that their customers may be laundering money. Sophisticated software systems allow financial institutions to collect and analyze millions of pages of data from the web and other sources to spot complex patterns indicative of potential money-laundering activities that could not previously be detected.[20]

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[18] *See* U.S. Centennial of Flight Commission, *Air Traffic Control*, *available at* http://www.centennialofflight.gov/essay/Government_Role/Air_traffic_control/POL15.htm.

[19] *See, e.g.*, Denise Brehm, MIT, Dep't of Civil & Envtl. Eng'g, *CEE Mapping Technology could make oil extraction more efficient* (Jan. 16, 2009), *available at* http://cee.mit.edu/news/releases/2009/oilrecovery; *see also* Dep't of Energy, *Diagnostics Imaging, and Fundamental R&D: Advanced Diagnostics & Imaging Research, Oil & Natural Gas Supply & Delivery*, *available at* http://fossil.energy.gov/programs/oilgas/fundamental/index.html.

[20] *See, e.g.*, *IBM and Semagix Join Forces to Combat Money Laundering* (Feb. 4, 2004), *available at* http://domino.watson.ibm.com/comm/pr.nsf/pages/news.20040204_money.html; *see also* Corp. for Am. Banking, *Anti-Money Laundering (AML) Transaction Monitoring Software*, *available at* http://www.aba.com/CAB/cab_fortent.htm.

In view of the significant technological nature of these inventions and the critical global challenges they address, IBM finds alarming decisions in the wake of *Bilski* concluding that software is excluded from patentable subject matter. In many instances these decisions explicitly acknowledge that the identical function deemed unpatentable in software would have been patentable if limited to embodiment in hardware, and that the mere inclusion of a software element in a claim would render the claim unpatentable. *See, e.g.*, *Ex Parte Altman*, No. 2008-2386, 2009 WL 1709111, at *5 (BPAI May 29, 2009) ("[W]e conclude that the scope of the claimed 'system' broadly encompasses both statutory (hardware based) and non statutory (disembodied software or computer program per se) embodiments. * * * 'If a claim covers material not found in any of the four statutory categories, that claim falls outside the plainly expressed scope of § 101 even if the subject matter is otherwise new and useful.' ") (citations omitted); *Ex Parte Godwin*, No. 2008-0130, 2008 WL 4898213, at *2 (BPAI Nov. 13, 2008) (claim unpatentable where specification "clearly indicates that Appellants' invention is not limited solely to hardware embodiments" and can "be realized in hardware, software, or a combination of hardware and software").

Such distinction is the height of a form-over-substance analysis; after all, the Board clearly recognizes the patentability of the claimed function, and finds that function to be unpatentable subject matter only because the function is or may be realized in software.[21] Far more troubling is what this faulty analysis portends for software innovators. Many software inventions are only commercially practicable in software or have no hardware analog. This leaves software innovators with a Hobson's choice: patent their inventions in hardware—enabling competitors to learn these innovative functions and implement them in software immune from claims of patent infringement—or completely forgo patent protection for software innovations and maintain their secrecy if possible.

A. Courts Have Recognized That Software Is Patentable Subject Matter.

The courts have guided the software industry in its reliance on patent protection. In the early days of software innovation, copyright was the preferred form of intellectual property protection. *See* Ronald J. Mann, *Do Patents Facilitate Financing in the Software Industry?*, 83 Tex. L. Rev. 961, 971-972 (2005). A series of decisions in the early 1990s culminating in the First Circuit's decision in *Lotus Development Corp.* v. *Borland International, Inc.*, successively diminished the protection provided by copyright to software, recognizing that it was inappropriate for copyright law to protect the functional aspects of software. 49 F.3d 807 (1st Cir. 1995), *aff'd per curiam by an equally divided Court*, 516 U.S. 233 (1996). In *Lotus*, the First Circuit held that the menu command hierarchy of a computer spreadsheet program was "uncopyrightable" as user interface software that functions as a method of operating a computer program. *See* 49 F.3d at 819 (Boudin, J., concurring) ("The computer program is a means for causing something to happen; it has a mechanical utility, an instrumental role, in accomplishing the world's work."); *see also* Computer Science & Telecomm. Bd., Nat'l Research Council, *Intellectual Property Issues in Software* 24 (1991) ("Copyright protection is extended only to expression of ideas, not to the underlying ideas themselves."); 17 U.S.C. 102(b) ("In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work."). While copyright law accordingly provides important protections against copying the expression embodied in software, the functional innovations that software provides are not effectively protected by copyright law.

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[21] By way of analogy, imagine the patent office fifty years ago declining to patent an innovative pump system merely because it was claimed as an electrically actuated pump rather than a manually activated pump.

By limiting copyright protection for software, the courts have appropriately guided software innovators to seek patent protection. Josh Lerner & Feng Zhu, *What is the Impact of Sofware Patent Shifts?: Evidence from* Lotus v. Borland, Harvard Univ. & Nat'l Bur. of Econ. Research, 25 Int'l J. of Ind. Org. 511 (2007); Mann, *supra*, 83 Tex. L. Rev. at 971-972 (2005). This judicial direction has resulted in substantial economic, technological, and societal benefit because software patents promote innovation both within and beyond the field of software.[22]

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[22] Without the benefit of patent protection, software companies would be forced to rely on secrecy which limits the public's ability to learn from software innovations, since patent documents are a significant source of technological disclosure.

B. Software Patent Protection Provides Significant Economic, Technological, and Societal Benefits.

The software industry is one of the most vibrant sectors of our economy. The software and information industries together generated $564.1 billion in revenue in 2005. Software & Info. Indus. Ass'n, *Software and Information Driving the Global Knowledge Economy* 27 (2008). These industries grew 10.8 percent in 2005, more than three times the overall U.S. Gross Domestic Product's growth of 3.2 percent that year. *Id.* at 7. The industries also represented 13 percent of total overseas sales of all U.S. industries in 2004 and grew direct export sales by more than 30 percent from 2000 to 2006. *Id.* at 9. Software and information technology is the fourth largest industry in the United States—ahead of food manufacturing and telecommunications. *Id.* at 8.

The software and information technology industries are also a significant force in the United States labor market. In 2006, the industries employed more than 2.7 million Americans, adding more than 400,000 jobs between 1997 and 2006. *Id.* These gains contrasted sharply with declines in other industries, including telecommunications (-8%), transportation equipment manufacturing

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See, e.g., *In re Alappat*, 33 F.3d 1526, 1571 (Fed. Cir. 1994) (Newman, J., concurring). Given the reality that software source code is human readable, and object code can be reverse engineered, it is difficult for software developers to resort to secrecy. Thus, without patent protection, the incentives to innovate in the field of software are significantly reduced. Patent protection has promoted the free sharing of source code on a patentee's terms—which has fueled the explosive growth of open source software development.

(-13%), and chemical manufacturing (-13%). *Id.* Additionally, the U.S. Department of Labor has projected the labor market in the software industry will continue to be among the fastest growing from 2006 to 2016. Dep't of Labor, *Occupational Outlook Handbook* 9 (2008). And it projects that computer software engineers will enjoy the largest job growth for candidates with bachelor's degrees during that time, with doctoral degree recipients in the field of computer research and information science projected to enjoy the second-fastest growth in job opportunities. *Id.* Protecting software patents is essential to the continued expansion of this labor market.

The benefits of software innovation also extend to other industries. Software is an enabling technology, and software innovations are not confined to software companies. They help drive innovations in many sectors of the American economy, including industries such as transportation, security, energy, and in biotechnology research. *Supra* at 7; *see also* Pet. App. 143a (Rader, J., dissenting) ("Innovation has moved beyond the brick and mortar world. * * * Today's software transforms our lives without physical anchors.").

The economic benefits that flow from software innovation are the product of significant investment in research and development. And the incentives provided by the patent system encourage that investment by providing the same quid pro quo as in other technology fields: the promise of economic rewards in exchange for the public disclosure of useful inventions. *See generally* Testimony of Nicholas M. Donofrio, Executive Vice President, Innovation and Technology, IBM Corp., Before the H.R. Comm. on Science (July 21, 2005); Cong. Office of Tech. Assessment, *Finding a Balance: Computer Software, Intellectual Property, and the Challenge of Technological Change*, 23 (1992) (recognizing that "patent protection is of importance to the U.S. software industry"). The exclusive rights granted to patentees encourage software innovators to pursue inventions that they might not otherwise pursue, in broad and diverse areas. *See generally* Mann, *supra*, 83 Tex. L. Rev. 961; John R. Allison, *et al.*, *Frontiers of Intellectual Property: Software Patents, Incumbents, and Entry*, 85 Tex. L. Rev. 1579 (2007).

Patent protection for software protects innovators from appropriation of their efforts by "free-riders." Without patent protection, the risk of appropriation may force software innovators into other, more promising ventures. *See, e.g.*, Richard S. Gruner, *Better Living Through Software: Promoting Information Processing Advances Through Patent Incentives*, 74 St. John's L. Rev. 977, 1004 (2000). The free-rider problem is particularly acute in the software sector because software products are "vulnerable to rapid, inexpensive copying that undercuts the initial developer's opportunity to benefit * * *, thereby undermining its incentives to invest in software development." Pamela Samuelson, *et al.*, *A Manifesto Concerning the Legal Protections of Computer Programs*, 94 Colum. L. Rev. 2308, 2332 (1994). While literal copying is the province of copyright law, the ease of appropriating software source code makes the patented inventions included in the code uniquely susceptible to instant appropriation.

As software has grown in importance, investment in software research and development now rivals the investment in hardware research and development. This investment has been steadfast, even during the recent economic downturn. *See* Justin Scheck & Paul Glader, *R&D Spending Holds Steady in Slump*, Wall St. J., A-1 (Apr. 6, 2009). Moreover, the software industry currently commits more than 13% of its sales revenue to research and development—a figure that is greater than or comparable to other research-intensive industries. *Id.*; *see also Corporate R&D Scorecard*, Tech. Rev. 56-57 (Sept. 2005). As Judge Mayer noted below, patents are of "undeniable importance in promoting technological advances," especially advances that require resources and effort to develop. Pet. App. 122a (Mayer, J., dissenting).

The disclosure required to obtain a patent ensures that "the knowledge of the invention enures to the people" and "stimulate[s] ideas and the eventual development of further significant advances in the art." *Kewanee Oil Co.* v. *Bicron Corp.*, 416 U.S. 470, 481 (1974). There is no question that the public disclosure required to obtain a patent advances knowledge, particularly in the fast-paced world of software development, by eliminating the need to replicate a past discovery and permitting others to build on each discovery as it occurs. Patents play a powerful role in the cumulative improvement of inventions. *See* Report of the President's Commission on the Patent System, *To Promote the Progress of * * * Useful Arts in an Age of Exploding Technology* (1966) (explaining that the "patent system encourages early public disclosure of technological information," and that early disclosure "reduces the likelihood of duplication of effort by others and provides a basis for further advances in the technology involved"); *see also KSR*, 550 U.S. at 427 ("These advances, once part of our shared knowledge, define a new threshold from which innovation starts once more."). Disclosure ensures that, among other things, university computer science students who will be the developers of the next generation of software advancements can study the inventions that power our existing software systems—which would not happen if the inventions were kept secret. In addition, disclosure of software inventions promotes collaboration among software developers (such as open source development) and interoperability among software platforms (such as software interoperability standards).[23]

There is no dispute that software is the infrastructure of today's information age; it performs the same function as hardware did a generation ago and enables new functions beyond those hardware can embody. Sound patent policy compels the conclusion that software is patentable subject matter.

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[23] Software interoperability standards such as those promulgated by the World Wide Web Consortium (w3c) and the Internet Engineering Task Force (IETF) are necessary to enable the important uses of software, *supra* at 18-23, which require acquisition and assimilation of data from numerous heterogeneous sources. With the advent of patent protection for software, firms are able to selectively license innovations on favorable terms to the community of standards users, thus encouraging other firms to participate in and adopt standards.

IV. NON-TECHNOLOGICAL METHODS SHOULD NOT BE PATENTABLE.

Sound patent policy and this Court's precedents support the patentability of technological software innovations. But no sound precedent or policy supports extending patent protection to non-technological inventions, including non-technological processes.

This Court has expressed concern about the patenting of nontechnological methods. *See eBay Inc.*, 547 U.S. at 396-397 (Kennedy, J., concurring); *Lab. Corp.*, 548 U.S. at 135-137 (Breyer, J., dissenting from dismissal of writ of certiorari). These pragmatic concerns are well-placed; they are born of the recognition that non-technological processes are by their nature focused on the ends achieved, not the technological means for achieving those ends. As a result, nontechnological method patents preempt any technological means to achieve the claimed results.

Nor is there any evidence that patent-based incentives are needed to spur innovation, or fund research and development, particularly for nontechnological business methods. "Nowhere in the substantial literature on innovation is there a statement that the United States economy suffers from a lack of innovation in methods of doing business." Leo J. Raskind, *The State Street Bank Decision: The Bad Business of Unlimited Patent Protection for Methods of Doing Business*, 10 Fordham Intel. Prop., Media & Ent. L.J. 61, 92 (1999). As President Coolidge quipped decades ago, "the chief business of the American people is business." Claude M. Fuess, *Calvin Coolidge, The Man from Vermont* 358 (1940).

In addition, to the extent businesses need protection for certain aspects of their work that have not traditionally enjoyed patent protection, other federal and state legal regimes such as unfair competition law and trade secret law can and have provided that protection. These legal regimes have long policed free-riding and allowed business pioneers to reap the rewards of their ideas. *See* Raskind, *State Street*, 10 Fordham Intell. Prop., Media & Ent. L.J. at 92-93 (noting the "substantial anecdotal evidence that competition alone serves as a sufficient spur to innovation in business methods."). Patent protection is simply not needed to protect non-technological business methods from a market failure problem or fill a legal void or to enhance social welfare.

For all of these reasons, non-technological business methods (like any other nontechnological innovation) should not be patentable subject matter. In most cases, it is simple to discern whether a claim is directed to a technological innovation or a non-technological innovation such as an abstract business method. For inventions that defy ready classification as technological or nontechnological processes, the machine-or-transformation test provides useful guidance for differentiating results-oriented claims that will preempt a whole class of technological applications or embodiments from those that will not.

Correctly differentiating between these two classes is important: Issuing patents on non-technological business methods raises significant competitive concerns and diminishes the general social welfare. *See, e.g.*, Malla Pollack, *Multiple Unconstitutionality of Business Method Patents: Common Sense, Congressional Consideration, and Constitutional History*, 28 Rutgers Computer & Tech. L.J. 76 (2002) ("If we grant rights to exclude unnecessarily, we raise prices and limit competition with no quid pro quo."). Broadly claimed abstract methods restrain the ability of competitors to develop alternatives to the patented invention, thus thwarting a principal aspiration of the patent system, which is to foster new alternatives. *Slimfold Mfg. Co.* v. *Kinkead Indus., Inc.*, 932 F.2d 1453, 1457 (Fed. Cir. 1991) ("Designing around patents is, in fact, one of the ways in which the patent system works to the advantage of the public in promoting progress in the useful arts, its constitutional purpose.").[24]

The absence of a compelling policy rationale for patents on nontechnological processes, including the anticompetitive consequences of issuing these patents, counsels that this Court clarify that patentable subject matter is limited to inventions involving technological contributions. *See eBay Inc.*, 547 U.S. at 397 (Kennedy, J., concurring) (recognizing the "potential vagueness and suspect validity" of many business method patents). The patent system is designed to serve a specific constitutional purpose: advancing the "useful arts." But granting monopolies on nontechnological inventions such as abstract ways of thinking about business or human interactions has nothing to do with advancing the useful arts—and in fact leads to market inefficiencies and harms the public welfare.

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[24] Consider, for example, the now-ubiquitous automated teller machine ("ATM"). Numerous patents cover mechanical, electrical, and computer-implemented ATM inventions like card readers, touch screens, cash dispensers, statement printers, and antitheft mechanisms. The robust competition within the ATM industry exemplifies that these patents have encouraged industry participants to innovate and allowed their competitors to market alternative designs. Were abstract business methods patentable, an inventor's claim to a "process of performing teller-free transactions" could be considered eligible for patenting under Section 101 and thereby stymied the technological advances in ATM capability and functionality over the years. Much like claim 8 of Samuel Morse's telegraphy patent, *see Morse*, 56 U.S. at 113, such an abstract patent, untethered to a particular practical application, would discourage all others from designing alternative mechanisms for meeting the same marketplace needs.

Non-technological patents have eroded public confidence in our patent system, diminished its public benefit, and imposed significant burdens on businesses that have dubious claims asserted against them. For example, patents on non-technological processes like developing legal strategies should be outside the ambit of patentable subject matter. *See* Stephanie L. Valera, *Damned if You Do, Doomed if You Don't: Patenting Legal Methods and Its Affect on Lawyers' Professional Responsibilities*, 60 Fla. L. Rev. 1145, 1146 (2008) ("Imagine, before advising each client, having to confer with the U.S. Patent and Trademark Office (USPTO) to determine whether another lawyer already owns a patent to the legal strategy you wish to propose. Imagine having to pay someone so your client can follow legal advice you wish to impart."); U.S. Patent No. 6,607,389, Systems and Methods for Making Jury Selection Determinations (issued Aug. 19, 2003).[25]

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[25] To be clear, it is not the field of the invention that determines patentability—which would be another improper

At its core, the patent system serves a constitutional purpose of promoting technological advances. The proper definition of patentable subject matter therefore cannot and should not subject the public to rent-seeking on nontechnological innovations.

The innovative aspect of Bilski's claims has nothing to do with technological advancement; it is about the abstract intellectual concept of hedging risk. But the "[t]he patent system is intended to protect and promote advances in science and technology, not ideas about how to structure commercial transactions." Pet. App. 106a (Mayer, J., dissenting).

The constitutional purpose of advancing the technological arts would not be served by finding Bilski's process patentable. *See Great Atlantic & Pacific Tea Co.*, 340 U.S. at 156 ("The question of invention goes back to the constitutional standard in every case.") (Douglas, J., concurring). The Court's concern with avoiding the preemption of scientific principles is designed to ensure that patents issue only for innovations that use or apply those scientific principles and make a technological contribution to the advancement of the useful arts. Bilski's claim makes no technological contribution of any kind and would effectively grant a monopoly on use of the abstract intellectual concept of hedging. Pet. App.

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form-over-substance analysis—but rather, the nature of the invention irrespective of field. It is possible to have technological inventions even in fields not generally associated with technology; likewise, it is possible to see nontechnological innovations in fields generally closely associated with technology.

134a (Rader, J., dissenting); Pet. App. 106a (Mayer, J., dissenting).

Throughout our history, the constitutional and statutory standard for patent-eligible subject matter has been sufficiently flexible to adapt to new technological innovations—ranging from improved methods of manufacturing flour, *Cochrane*, 94 U.S. at 781, 791, to man-made micro-organisms, *Chakrabarty*, 447 U.S. at 318, to a chemical process involving a programmed digital computer, *Diehr*, 450 U.S. at 191-193. Each of these flexible applications of the appropriate scope of patentable subject matter has sought to further technological advances by permitting the application of fundamental principles to new and useful ends while ensuring that these fundamental principles themselves remain available to all. *See United States* v. *Dubilier Condenser Corp.*, 289 U.S. 178, 188 (1933) ("the act of invention * * * consists neither in finding out the laws of nature, nor in fruitful research as to the operation of natural laws, but in discovering how those laws may be utilized or applied for some beneficial purpose, by a process, a device or a machine").

The trilogy of *Benson*, *Flook*, and *Diehr* made clear that a process, to be eligible for patenting, must be more than an abstract idea or concept—even a very useful abstract idea or concept. Bilski's claimed method amounts to a claim on the intellectual concept of hedging and was properly denied. But when it announced a one-size-fits-all test for patentability in the process of deciding Bilski's case, the Federal Circuit precipitated confusion over its applicability to software patentability. Software is and must remain patentable subject matter.

CONCLUSION

Patentable subject matter under Section 101 is restricted to inventions that involve a technological contribution and do not preempt a fundamental principle. Returning the focus to these substantive principles of patentability is necessary to restore balance to the patent system's policy objective of fostering innovation without improperly impacting competition.

Respectfully submitted,

MARC A. EHRLICH
MANNY W. SCHECTER
MARIAN UNDERWEISER
IBM CORPORATION
One North Castle Dr.
Armonk, NY 10504
(914) 765-4260

KENNETH R. CORSELLO
IBM CORPORATION
1101 Kitchawan Rd.
Yorktown Heights, NY
10598
(914) 945-2631

* Counsel of Record

CATHERINE E. STETSON *
JESSICA L. ELLSWORTH
HOGAN & HARTSON LLP
555 Thirteenth St., N.W.
Washington, D.C. 20004
(202) 637-5491

RANDALL BLUESTONE
VAN N. NGUY
IBM CORPORATION
650 Harry Rd.
San Jose, CA 95120
(408) 927-3386

Counsel for Amicus Curiae

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◆

BERNARD L. BILSKI, *et al.*,

Petitioners,

v.

DAVID J. KAPPOS,

Respondent.

◆

On Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

◆

AMICI CURIAE BRIEF OF INTERNET RETAILERS IN SUPPORT OF RESPONDENT

◆

PETER J. BRANN
(*Counsel of Record*)
DAVID SWETNAM-BURLAND
STACY O. STITHAM
BRANN & ISAACSON
184 Main St., P.O. Box 3070
Lewiston, Maine 04243-3070
(207) 786-3566

Attorneys for Amici Curiae

COCKLE LAW BRIEF PRINTING CO. (800) 225-6964
OR CALL COLLECT (402) 342-2831

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INTEREST OF *AMICI CURIAE*

Amici Crutchfield Corp., Newegg, Inc., L.L. Bean, Inc., Overstock.com, J.C. Penney Co., Inc., The Talbots, Inc., and Hasbro, Inc. (collectively, the "Internet Retailers") submit this brief in support of the judgment below to explain the practical consequences of a legal regime in which Internet retailers may be sued for alleged infringement of business method patents simply because they sell their goods online.* Each of these retailers came to the Internet by a different route – some started out as a catalog retailer or a single store in the early twentieth century, while others began as online sellers in the early twenty-first century – but they share in common recent experience defending patent infringement claims based not on the tens of thousands of products that they sell, and based not on the fact that some of them sell those products through hundreds of stores or millions of catalogs, but rather based simply on the fact that they sell their products on the Internet.

Crutchfield was founded in 1974 by Bill Crutchfield in his mother's basement in Charlottesville, Virginia, as a catalog company selling electronic equipment. Beginning in 1996, Crutchfield also began offering its products online, through www.crutchfield.com. Today, Crutchfield has only two small brick-and-mortar stores in Virginia; but, in addition to its catalog sales, it has become one of the country's leading Internet retailers. *See Internet Retailer Top 500 Guide* 202 (2009) (No. 105, $144 million in online sales in 2008). Accompanying its online growth has been its concomitantly increased role as a defendant in patent lawsuits alleging infringement of patents through the operation of its e-commerce site, including, for example, U.S. Patent No. 5,367,627 ("Computer-Assisted Parts Sales Method").

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* In accordance with S. Ct. R. 37.3(a), all parties have consented to the filing of this brief. The Petitioners and Respondent have filed consent letters with the Clerk. Pursuant to S. Ct. R. 37.6, counsel for *Amici* state that no counsel for a party authored this brief in whole or in part, and no person or entity other than *Amici* or their counsel made a monetary contribution to the preparation or submission of this brief.

Founded in 2001, Newegg is headquartered in Industry, California, and exclusively sells electronics, software, appliances, and electronic games through its web site, www.newegg.com. Although Newegg offers over 40,000 products online, it has been sued only a handful of times for patent infringement based on the features of any of those products (and has been indemnified by the vendors of the allegedly infringing products in such cases). Instead, as one of the most successful Internet retailers, *see Internet Retailer Top 500 Guide* 100 (2009) (No. 9, $2.1 billion), Newegg frequently must defend itself in patent infringement suits by "non-practicing entities" that claim their patents cover the operation of e-commerce web sites, *e.g.*, a recent suit under U.S. Patent No. 5,715,314 ("Network Sales System").

Leon Leonwood Bean opened his sporting goods store in Freeport, Maine, in 1912, and, on the strength of the Bean Hunting Shoe and other cornerstone products, later expanded to become one of the country's leading catalog merchants. Following the birth of the commercial Internet in 1996, L.L. Bean began to sell outdoor equipment and clothing on its web site, www.llbean.com. As another of the leading online sellers, *see Internet Retailer Top 500 Guide* 119 (2009) (No. 22, $1.0 billion), L.L. Bean is also a recurrent defendant in patent lawsuits claiming some connection to e-commerce, including a recent suit under U.S. Patent No. 5,528,490 ("Electronic Catalog System and Method").

Headquartered in Salt Lake City, Utah, since 1999 Overstock has sold excess inventory of brand-name merchandise at a discount exclusively through its web site, www.overstock.com. Its explosive growth on the Internet, *see Internet Retailer Top 500 Guide* 111 (2009) (No. 29, $834 million), has been accompanied by a similarly explosive growth in patent litigation concerning its method of doing business, *i.e.*, on the Internet.

James Cash Penney launched his dry goods and clothing store ("The Golden Rule") in Kemmerer, Wyoming in 1902. Today, with its headquarters in Plano, Texas, J.C. Penney has become one of the nation's leading retailers with over 1,100 stores located throughout the United States and Puerto Rico, and annual sales of over $18.5 billion. J.C. Penney operates an e-commerce web site, www.jcp.com, and is now one of the nation's leading Internet retailers as well. *See Internet Retailer Top 500 Guide* 111 (2009) (No. 15, $1.5 billion). J.C. Penney similarly faces suits for patent infringement based on the operation of its web site.

Founded in 1947 in Hingham, Massachusetts, Talbots has become a leading specialty retailer and direct marketer of women's classic clothing, shoes, and accessories. In addition to catalog sales and nearly 600 stores in 47 states, Talbots has become one of the country's top Internet retailers. *See Internet Retailer Top 500 Guide* 202 (2009) (No. 106, $142 million). Increasingly, Talbots has become a magnet for patent infringement lawsuits based solely on the method of operation of its web site, www.talbots.com.

Beginning in 1923 from its headquarters in Pawtucket, Rhode Island, Hasbro has become a worldwide leading seller of iconic toys and games, such as Mr. Potato Head and Monopoly. Although its online sales on its retail web site, www.hasbrotoyshop.com, are miniscule, nevertheless, Hasbro also has been sued for patent infringement based on the operation of its web sites, including a recent suit under U.S. Patent No. 5,615,342 ("Electronic Proposal Preparation System").

Stated differently, Internet Retailers from Maine to California, with and without stores, with and without catalogs, selling everything from microwave ovens to Easy-Bake ovens, have one thing in common

– they are frequently defendants in patent infringement lawsuits based solely on the method in which they operate their web sites.

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SUMMARY OF ARGUMENT

Business method patent claims are the claims most often asserted against companies that sell products online because it is easy for a plaintiff to allege in broad language that its patent can be read onto a retail web site. Faced with the prospect of spending millions of dollars to defend themselves, often in a faraway forum, against patent claims that amount to little more than "we own a patent, you operate a web site," virtually all Internet retailers agree to settle these types of cases before a decision on the merits. Rational retailers settle, not because the allegations of the plaintiff have merit, but because the cost of settlement, although high, is less than the even higher cost of defense.

In effect, business method patents amount to a tax on Internet commerce, transferring hundreds of millions of dollars from Internet retailers, the innovative bright spot in a dim economy, to "non-practicing entities," also known as "patent trolls." Although the Federal Circuit properly concluded that the Petitioners' claims were not patentable in its opinion below, this Court should not only affirm that judgment, but also should state unequivocally that business methods are not patentable because they flunk the applicable constitutional test: "To promote the Progress of Science and useful Arts[.]" U.S. Const. Art. I, § 8, cl. 8 (brackets added).

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ARGUMENT

INTERNET RETAILERS ARE FREQUENTLY SUED UNDER BUSINESS METHOD PATENTS, AND, AS A PRACTICAL MATTER, CANNOT EFFICIENTLY, EFFECTIVELY, OR ECONOMICALLY DEFEND THEMSELVES.

Although they may operate their web sites in the virtual world of the Internet, online retailers operate their businesses in the very real world of the twenty-first century economy. It is the often grimy reality of contemporary patent litigation that the Internet Retailers find missing from the debate over the patentability of business methods. The Petitioners argue at a high level of abstraction that "[a]ny concerns over potentially vague or trivial patents for business methods should be addressed by other requirements of patentability, such as novelty, nonobviousness, and definite claiming." Petitioners' Brief at 16 (brackets added). In fact, the Internet Retailers know – and have paid dearly for that knowledge – that these doctrines were not designed for, and are not up to, the task of weeding out unpatentable business method claims on the Internet. These patents should be nipped in the bud because they are not the proper subject matter of a patent grant, and not just uprooted only after they have been allowed to flourish. Although not eager to embrace the role, like Dante's Virgil, the Internet Retailers can serve as guides to the fissures in the patent laws created by the endorsement and proliferation of business method patents.

Growth of the Internet. As one of the dissenters below noted, "[t]he innovations of the 'knowledge economy' – of 'digital prosperity' – have been dominant contributors to today's economic growth and societal change." *In re Bilski*, 545 F.3d 943, 976-77 (Fed. Cir. 2008) (Newman, J., dissenting) (brackets added). In recent decades, that economic growth and societal change has occurred most notably on and through the Internet. From its nascent beginnings of fewer than 150 web sites in 1993, the number of web sites grew exponentially to approximately 100,000 in 1996, and over 162 million in 2008. *See* Royal Pingdom, http://royal.pingdom.com/2008/04/04/how-we-got-from-1-to-162-million-websites-on-the-internet/ (last visited Sept. 30, 2009).

Increasingly, companies and individuals sell their products and services on the Internet. Last year, there were approximately $178 billion in Internet sales. Mark Brohan, *Online Retailing Weathered the Storm in 2008 and Finished as the Retail Market's Only Growth Driver*, Internet Retailer 35 (June 2009). As an oasis in an economic desert, web sales actually increased 4.6% last year. *Id.* Perhaps recognizing the "open source" origins of the Internet or the need to foster the unfettered growth of the Internet and e-commerce, Congress has decreed that access to the Internet should not be taxed in the Internet Tax Freedom Act, codified as a Note to 47 U.S.C. § 151. Private parties, however, are imposing a *de facto* tax on the Internet by asserting business method patent claims against Internet retailers in litigation targeting retail web sites.

Growth of Business Method Patents. The exponential growth in Internet usage has been accompanied by an equally enormous growth in business method patents following the Federal Circuit's approval of such patents in *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), *cert. denied*, 525 U.S. 1093 (1999). Over 40,000 business method patent applications have been filed since *State Street* opened the floodgates, and over 15,000 such patents have been issued. *See Bilski*, 545 F.3d at 992 (Newman, J., dissenting); *see also eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 397 (2006) (Kennedy, J., concurring) (noting the "burgeoning number of patents over business methods"). It is currently estimated that approximately 11,000 patents cover various aspects of the Internet, many, if not most, of which, are business method patents, *i.e.*, patents that claim inventions not of specific technologies, but of vaguely worded "methods" for doing something. *See* James Bessen & Michael J. Meurer, *Patent Failure* 8-9 (2008). If the aperture is opened wider to include software patents, it is estimated that there currently are over 200,000 such patents. *Id.* at 22. In other words, literally thousands of people can claim partial invention of the Internet, and thus, potentially can file suit to claim a share of the $178 billion in annual Internet sales.

The increase in the number of business method patents has been accompanied by a corresponding eruption in the number of patent lawsuits filed. As detailed in Figure 1 (Number of Patent Cases Filed by Year: 1994-2008, Appendix ("App.") 1, the number of new-filed patent infringement actions as recorded in the federal courts' Public Access to Court Electronic Records ("PACER") system has nearly doubled in the years following *State Street*.

Moreover, the number of cases filed is not a reliable indicator of the number of defendants accused of infringement since, increasingly, "non-practicing entities" file omnibus infringement actions naming dozens of companies in a single complaint. *See*, *e.g.*, Complaint (Doc. No. 1), *Paul N. Ware*, *et al. v. Abercrombie & Fitch Stores, Inc.*, *et al.*, Civil Action No. 4:07-cv-122 (N.D. Ga. June 19, 2007) (alleging infringement of U.S. Patent No. 4,707,592 ("Personal Universal Identity Card System for Failsafe Interactive Financial Transactions") by 109 separate defendants). Additionally, "[s]oftware patents are more than twice as likely to be litigated as other patents; patents on methods of doing business, which are largely software patents, are nearly *seven* times more likely to be litigated." Bessen & Meurer, *Patent Failure*, *supra,* at 22 (brackets added and emphasis in original). In other words, the chance of being sued for patent infringement has skyrocketed since the Federal Circuit approved business method patents in *State Street*.

Patent Law Purpose. "[T]he primary purpose of our patent laws is not the creation of private fortunes for the owners of patents but is 'to promote the progress of science and useful arts.'" *Motion Picture Patents Co. v. Universal Film Mfg. Co.*, 243 U.S. 502, 511 (1917) (quoting U.S. Const. Art. I, § 8, cl. 8) (brackets added); *see also Aronson v. Quick Point Pencil Co.*, 440 U.S. 257, 262 (1979) ("patent law seeks to foster and reward invention") (citation omitted); *Sanofi-Synthelabo v. Apotex, Inc.*, 470 F.3d 1368, 1383 (Fed. Cir. 2006) ("We have long acknowledged the importance of the patent system in encouraging innovation."). Particularly in "[a]n industry [that] has developed in which firms use patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees[,]" *eBay*, 547 U.S. at 396 (Kennedy, J., concurring) (brackets added), it is apparent that business method patents asserted against Internet retailers are not being used to promote the progress of science and useful arts, but simply to extract hundreds of millions, if not billions, of dollars from the most successfully innovative members of the digital economy through monopoly claims on e-commerce.

In this regard, the true digital divide is between companies that make goods and companies that sell those goods. Because it can take $800 million to $1.7 billion to develop a new drug that can obtain FDA approval, *see* Jay Dratler, Jr., *Alice in Wonderland Meets the U.S. Patent System*, 38 Akron L. Rev. 299, 313-14 & n.57 (2005); *Sanofi-Synthelabo*, 470 F.3d at

1383-84, courts, commentators, and Congress have concluded that patent protection is essential to promote the progress of science and useful arts in the pharmaceutical industry. *Id.*; *see, e.g.*, *Eli Lilly & Co. v. Premo Pharm. Labs., Inc.*, 630 F.2d 120, 137 (3d Cir. 1980) (after noting it took Eli Lilly 20 years and tens of millions of dollars to develop the drug at issue, the court observed "[u]nless this type of an investment of human and capital resources is rewarded by some form of patent protection, companies such as Eli Lilly might well choose not to undertake such large expenditures and instead devote themselves to other endeavors") (brackets added). Accordingly, in extending patent protection for pharmaceuticals in the Hatch-Waxman Act, the House Committee on Energy and Commerce Report explained:

> Patents are designed to promote innovation by providing the right to exclude others from making, using, or selling an invention. They enable innovators to obtain greater profits than could have been obtained if direct competition existed. These profits act as incentives for innovative activities.

H.R. Rep. No. 98-857, at 15, reprinted in U.S. Code Cong. & Admin. News 2647, 2650 (1984) (quoted in *Biotechnology Indus. Org. v. District of Columbia*, 505 F.3d 1343, 1346 (Fed. Cir. 2007) (Gajarsa, J., concurring in the denial of the petition for rehearing *en banc*)).

The same rationale does not apply to a business method that, even taken at face value, simply adds a new feature to a web site. *See* Jay Dratler, Jr., *Does Lord Darcy Yet Live? The Case Against Software and Business-Method Patents*, 43 Santa Clara L. Rev. 823, 848-51 (2003). For business methods, unlike pharmaceuticals, the risk generally is not the loss of an unrecoverable past investment, but rather the future risk that the business method will not succeed in the marketplace. *Id.* Stated differently, the reward for creating a successful business method, say, for example, the Petitioners' method of hedging risk in the field of commodities, *see Bilski*, 545 F.3d at 949, is that the business method actually works and will, for example, hedge risk in the field of commodities more successfully. Whereas a drug company needs assurance that its multi-million dollar pre-market investment in a drug will be repaid, a commodity trader needs no further incentive to improve how he or she hedges risk than the market pressure to outperform rival traders. Because successful business methods are their own just reward, we need not suffer "the embarrassment of an exclusive patent" in order to encourage innovators to develop better web sites. *See* Dratler, 43 Santa Clara L. Rev. at 883 (quoting Letter from Thomas Jefferson to Isaac M'Pherson (Aug. 13, 1813) (reprinted in 5 *The Writings of Thomas Jefferson* 181 (H.A. Washington ed., New York, John C. Riker 1857)); *cf. Graham v. John Deere Co.*, 383 U.S. 1, 7 (1966) (describing Jefferson as the "first administrator of our patent system") (quotation omitted).

Notwithstanding "[t]he potential vagueness and suspect validity of some of these patents," *eBay*, 547

U.S. at 397 (Kennedy, J., concurring) (brackets added), it is highly unlikely that any court will ever evaluate the validity of most such patents because of the nature and inherent cost of patent litigation. Internet retailers sued for patent infringement based on the operation of their web sites face hydraulic pressures to settle such cases. Thus, under the current patent litigation regime, the "[o]ther requirements of patentability, such as novelty and nonobviousness" cited by Petitioners as "better tools for eliminating trivial patents," Petitioners' Brief at 41, are rendered almost wholly ineffective because they are in reality unavailable to a rational Internet retailer with an eye on its short-term bottom line.

Legal Roadblocks to Defending Business Method Claims. An admixture of legal and practical reasons renders patent litigation as presently practiced unsuited to weeding out improvidently issued business method claims. As a threshold matter, issued patent claims are entitled to a presumption of validity, 35 U.S.C. § 282, which can only be overcome by clear and convincing evidence of invalidity. *Kaufman Co. v. Lantech, Inc.*, 807 F.2d 970, 973-74 (Fed. Cir. 1986). The presumption derives from the assumption that the United States Patent and Trademark Office (the "PTO") has approved the claim after reviewing relevant prior art. *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 425 (2007). Although this Court has recognized that the rationale for the presumption is "much diminished" when a piece of prior art presented to a court was not before the examiner in the PTO, *see id.*, the presumption nonetheless stands between an accused infringer and a judicial determination of invalidity.

Moreover, the invalidity defenses Petitioners cite as "better tools for eliminating trivial patents," *i.e.*, novelty, obviousness, and definite claiming, *see* Petitioners' Brief at 16, 41, are not designed to address the inherent problem with business method patent claims. The trouble with business method claims is not simply that they are trivial – they may be – but that they are abstract, and thus they are not susceptible to ready categorization as innovations in a particular "art," which, in turn, makes them difficult to invalidate once they have issued. *Cf. Gottschalk v. Benson*, 409 U.S. 63, 67 (1972) (abstract intellectual processes not eligible for patent protection).

Indeed, "non-practicing entities," who are not concerned with practicing what they preach, exploit this abstractness to assert that patents which make no mention of the Internet or web site design cover retail web sites based on the logic that a "method for doing X" covers "a method for doing X on a web site." *Cf.* Petitioners' Brief at 7 ("The method of the invention does not necessarily have to be performed on a particular machine or computer, although the practice of the invention will most likely involve both computers and modern telecommunications. The method steps are no less real, however, as they require communicating and negotiating with consumers and suppliers in a particular way to balance risk positions."). Thus, in determining the prior "art" concerning the Petitioners' alleged innovative method of hedging risk in the field of commodities, it is by no means clear whether one should look in the fields of computer science, statistics, game theory, commodities trading, psychology, or someplace else.

In the context of patent litigation, and in the face of the presumption of the validity of issued patent claims, an Internet retailer cannot necessarily address the abstractness problem by finding a single anticipatory piece of prior art that disproves the novelty of the invention. *See* 35 U.S.C. § 102; *Verdegaal Bros., Inc. v. Union Oil Co. of Cal.*, 814 F.2d 628, 631 (Fed. Cir. 1987) (patent claim anticipated if each element of the claim is found in a single piece of prior art). Indeed, the more abstract the concept, the less likely there is to be such a piece of prior art. Nor can an Internet retailer necessarily prove "that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims" through one or more pieces of prior art. *KSR*, 550 U.S. at 420. Nor still by demonstrating that the claims are not "amenable to construction" or are "insolubly ambiguous," and therefore indefinite. *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1348 (Fed. Cir. 2005) (quotation omitted).

An idea may be new, innovative, and commercially successful, yet not patentable. *See Lowe's Drive-In Theatres v. Park-In Theatres*, 174 F.2d 547, 552 (1st Cir. 1949) ("For we are not here called upon to deal with the novelty, usefulness, or commercial success of the outdoor drive-in theatre as an idea, or as a system for transacting business, but with the mechanical means or instrumentalities by which it may be made practically useful.") (quotations omitted). That is the core problem with business method patent claims, not that they are always or necessarily anticipated, obvious, or indefinite, but that they are ethereal, and thus, do not fit neatly into the usual categories in which the validity of patents are ordinarily tested.

Practical Roadblocks to Defending Business Method Claims. Even setting aside doctrinal difficulties, the practical realities of contemporary patent litigation make invalidity defenses a distant mirage for most defendants. First and foremost, patent litigation is notoriously expensive. According to the American Intellectual Property Law Association, in 2007, when over $1 million was at stake, the average cost of defending a patent lawsuit was over $2.5 million. *See* Christopher A. Harkins, *Tesla, Marconi, and the Great Radio Controversy: Awarding Patent Damages Without Chilling a Defendant's Incentive to Innovate*, 73 Mo. L. Rev. 745, 766-67 (2008). When over $25 million is at stake, the average cost of defending a patent lawsuit through trial climbs to $5 million. *Id.*

> Defending a patent suit can easily cost millions of dollars, with no guarantee of success. The patent troll offers a license for under $100,000. The end user makes a business decision – millions of dollars to

> defend a suit that might be lost, or $100,000 or less for certainty? The end user takes a license.

Darren Cahr & Ira Kalina, *Of PACs and Trolls: How the Patent Wars May Be Coming to a Hospital Near You*, 19 Health Lawyer 15, 16 (Oct. 2006).

Because business method patents concerning the operation of a web site, by definition, do not affect an Internet retailer's core products, but simply a marketing and sales channel, it almost always will be more cost effective to settle the case to get back to the business of selling computer equipment, or hunting shoes, or whatever. This is particularly true when the company confronts the presently existing roadblocks to defending successfully such vague and suspect claims.

The initial complaint in a patent case usually alleges no more than "we own a patent, you operate a web site." Notwithstanding the promise of *Bell Atlantic Corp. v. Twombly*, 550 U.S. 544 (2007), and *Ashcroft v. Iqbal*, 129 S. Ct. 1937 (2009), that plaintiffs must allege a plausible claim against a specific defendant, in patent cases a different *de facto* rule governs – the plaintiff need only allege that it owns a patent and that the defendant infringes. *See McZeal v. Sprint Nextel Corp.*, 501 F.3d 1354 (Fed. Cir. 2007); *cf.* Fed. R. Civ. P. Form 18 (sample patent complaint requiring only allegations of jurisdiction, ownership, infringement "by making, selling, and using" a device "embodying the patented invention," notice of infringement, and demand for relief). Thus, an Internet retailer cannot short-circuit nebulous claims against its retail web site by filing an early and relatively inexpensive motion to dismiss that would require the plaintiff to identify, for example, what claims of the patent are infringed by what features of the web site. *See, e.g., Edge Capture, L.L.C. v. Lehman Bros. Holdings, Inc.*, 2008 WL 4083146, *1 (N.D. Ill. Aug. 28, 2008); *see also* R. David Donoghue, *The Uneven Application of* Twombly *in Patent Cases: An Argument for Leveling the Playing Field*, 8 J. Marshall Rev. Intell. Prop. L. 1, 2-3 (2008) (in patent cases, "the uneven application of *Twombly* by lower courts has tilted that playing field decidedly in favor of plaintiffs").

Furthermore, patent lawsuits can be filed anywhere the alleged infringement occurs. 28 U.S.C. § 1400; *see Trintec Indus., Inc. v. Pedre Promotional Prods., Inc.*, 395 F.3d 1275 (Fed. Cir. 2005). For claims allegedly relating to the Internet, this has been interpreted to mean that anywhere a customer can access an interactive web site, the court has personal jurisdiction over the defendant and venue is proper. *See, e.g., Gorman v. Ameritrade Holding Corp.*, 293 F.3d 506 (D.C. Cir. 2002) (non-patent case); *Autobytel, Inc. v. Insweb Corp.*, 2009 WL 901482 (E.D. Tex. Mar. 31, 2009) (patent case); *see* 28 U.S.C. § 1391 (venue proper where court has personal jurisdiction).

Because anyone who operates a web site can be sued in any district in the country, the leading district for filing patent lawsuits is not the district that covers Silicon Valley, the Northern District of California. Nor is it the district in which the most companies are incorporated, the District of Delaware. Nor is it a district in one of the country's largest urban business centers, such as the Southern District of New York, the Northern District of Illinois, or the Central District of California. Rather, as shown on Figure 2 (Number of Patent Cases Filed by Jurisdiction: 1994-2008), App. 2, the most popular judicial district for new patent infringement lawsuits over the last two years – as measured by the number of new lawsuits designated as raising patent infringement claims on PACER – has been the Eastern District of Texas, which is not a major commercial center, but rather a district which has, rightly or wrongly, developed a reputation as a plaintiff-friendly forum.

For defendants sued in a distant forum, attempts to transfer such cases to more convenient venues where parties or witnesses are located are usually unsuccessful. Despite a flurry of recent mandamus petitions following denials of motions to transfer in patent cases, *see In re Genentech, Inc.*, 566 F.3d 1338 (Fed. Cir. 2009); *In re Volkswagen of America, Inc.*, 566 F.3d 1349 (Fed. Cir. 2009); *In re TS Tech USA Corp.*, 551 F.3d 1315 (Fed. Cir. 2008), motions to transfer patent cases still are routinely denied. *See, e.g., Aloft Media, L.L.C. v. Yahoo!, Inc.*, 2009 WL 1650480 (E.D. Tex. June 10, 2009). In multi-defendant cases, the fact that the plaintiff has chosen to sue multiple defendants from across the country in a single lawsuit has been deemed to render any forum equally convenient or inconvenient to the defendants, tipping the balance in favor of the plaintiff's chosen forum. *See, e.g.*, *MHL Tek, LLC v. Nissan Motor Co.*, 2009 WL 440627, *4 (E.D. Tex. Feb. 23, 2009). Thus, Internet retailers sued under broadly worded and undeveloped patent infringement claims often must defend those claims in distant districts, which further increases the pressure to settle.

If Internet retailers do choose to litigate these lawsuits, they then often confront the impact of Local Patent Rules promulgated first by the Northern District of California, and now adopted by many districts, including the Southern District of California, Northern District of Georgia, Eastern District of Missouri, Eastern District of North Carolina, District of New Jersey, Western District of Pennsylvania, Eastern District of Texas, Southern District of Texas, and Western District of Washington. (Many other districts and individual judges have adopted partial patent rules or issued patent-specific standing orders.) As the Federal Judicial Center explains, Local Patent Rules "were developed to facilitate efficient discovery by requiring patent litigants to promptly disclose the bases underlying their claims." Peter S. Menell, *et al.*, *Patent Case Management Judicial Guide* 2-9 (2009). In practice, however, mandatory disclosures under the Local Patent Rules and the accompanying wide-ranging discovery, like injunctions, "can be employed as a bargaining tool to charge exorbitant fees to companies that seek to buy licenses to practice the patent." *eBay*, 547 U.S. at 396 (Kennedy, J., concurring).

It is not uncommon for parties in patent litigation to exchange hundreds of thousands, if not millions, of pages of documents. *See, e.g., Network Appliance Inc. v. Sun Microsystems Inc.*, 2008 WL 4821318, *1 (N.D. Cal. Nov. 3, 2008) (3 million pages of documents); *Hynix Semiconductor Inc. v. Rambus Inc.*, 591 F. Supp. 2d 1038, 1067 (N.D. Cal. 2006) (1.2 million pages of documents). In patent cases in which the right to a billion-dollar blockbuster drug is at stake, it may make economic sense to spend the money necessary to produce 3.3 million pages of documents, *see Astrazeneca AB v. Ranbaxy Pharms., Inc.*, 2008 WL 5272018, *5 (D.N.J. Dec. 16, 2008), but that is rarely going to be the case when a "non-practicing entity" is challenging only a minor feature of an Internet retailer's web site, but nevertheless is demanding all of a company's source code and documentation relating to the web site for the claimed purpose of fleshing out its infringement claim.

In patent cases in which a company's web site allegedly infringes the plaintiff's business method patent, plaintiffs often provide only a handful of screen shots in purported satisfaction of their obligation to provide detailed infringement contentions, *see, e.g.,* N.D. Cal. L. Pat. R. 3-1, claiming, successfully, that they cannot provide additional information until they obtain all documentation concerning the design and operation of the web site, including the highly confidential source code. *See, e.g., Am. Video Graphics, L.P. v. Elec. Arts, Inc.*, 359 F. Supp. 2d 558, 560-61 (E.D. Tex. 2005). Thus, neither the allegations in the complaint nor the infringement contentions mark the metes and bounds of vague business method patents in a way that makes it clear to a defendant what it has specifically been accused of doing.

> Although not all software patents suffer from abstract or overly broad claims, software technology is especially prone to these problems. Indeed, software patents are much more likely than other patents to have their claim construction reviewed on appeal – an implicit indication that parties to lawsuits have fundamental uncertainty over the boundaries of these patents. This uncertainty leads to more frequent litigation and substantially higher litigation costs.

Bessen & Meurer, *Patent Failure, supra,* at 23. Faced with abstract and all-encompassing claims, and the resulting increase in uncertain and costly litigation, Internet retailers usually succumb to the siren song of settlement and licensing.

Adding insult to injury, because the language of the patent claims themselves is so ill-defined, *everything* relating to the design and operation of the web site is considered relevant to such claims, and thus subject to the plaintiff's demand that *all* documents relating to the web site be produced so that the plaintiff can discover where and how the alleged infringement occurs. *Cf. Soverain Software LLC v. Amazon.com, Inc.*, 356 F. Supp. 2d 660, 663 (E.D. Tex. 2005) (parties "produced hundreds of thousands of pages of documents and millions of lines of source code"). For a retailer with a highly successful retail web site, this is being asked to hand over the keys to the kingdom.

Meanwhile, defendants shortly thereafter must provide their invalidity contentions, including all prior art, together with source code, schemata, flow charts, and detailed claim charts explaining exactly how the prior art invalidates the patent. *See, e.g.*, N.D. Cal. L. Pat. R. 3-3; *see also O2 Micro Int'l Ltd. v. Monolithic Power Sys., Inc.*, 467 F.3d 1355, 1365-66 (Fed. Cir. 2006) (Local patent rules require "both the plaintiff and *the defendant* in patent cases to *provide early notice* of their infringement and *invalidity contentions*, and to proceed with diligence in amending those contentions when new information comes to light in the course of discovery.") (emphasis added and quotation omitted); *Nova Measuring Instruments Ltd. v. Nanometrics, Inc.*, 417 F. Supp. 2d 1121, 1123 (N.D. Cal. 2006) (Local Patent Rules "are designed to require parties to *crystallize their theories of the case early in the litigation* and to adhere to those theories once they have been disclosed.") (emphasis added). Indeed, defendants are frequently prohibited from raising certain invalidity defenses because they did not raise them or identify the relevant prior art sufficiently early in the case in accordance with the Local Patent Rules. *See, e.g., Network Appliance Inc. v. Sun Microsystems, Inc.*, 2009 WL 2761924, *4-5 (N.D. Cal. Aug. 31, 2009) (partial denial of motion to amend invalidity contentions); *Funai Elec. Co. v. Daewoo Elec. Corp.*, 593 F. Supp. 2d 1088, 1102 (N.D.

Cal. 2009) (waiver by failure to include specific legal theory in invalidity contentions).

On the one hand, the plaintiff may have had years to investigate and develop its infringement theories, and yet, as a practical matter, need not disclose much more than screen shots of the defendants' web sites and the statement that the infringement can be found somewhere in the defendants' source code. On the other hand, defendants must immediately determine the likely reach of the plaintiff's claims, and then identify all of the prior art that anticipates each and every element of each claim, or otherwise invalidates the patent. *Cf. Impax Labs., Inc. v. Aventis Pharm. Inc.*, 468 F.3d 1366, 1381 (Fed. Cir. 2006) ("A patent claim is invalid as anticipated if every limitation in a claim is found in a single prior art reference, either explicitly or inherently.") (citation omitted). Thus, the Local Patent Rules effectively may require an Internet retailer to produce – and to produce in short order – hundreds of thousands, if not millions, of pages of internal documents containing proprietary information relating to its web sites, business plans, and operations in order to force the plaintiff to comply with its obligation to provide meaningful infringement contentions, and to search the world to locate prior art to comply with the Internet retailer's obligation to provide meaningful invalidity contentions.

Meanwhile, the plaintiff, especially if it is an entity created solely to acquire and litigate patents, has few, if any, documents to produce because its only business is litigation and it does not practice the invention it is litigating. "At this task, they must labour in the face of the majestic equality of the laws, which forbid the rich and poor alike to sleep under the bridges, to beg in the streets, and to steal their bread." Anatole France, *The Red Lily* 95 (Frederic Chapman ed. 1910). Faced with enormous discovery costs and the disclosure of the intimate details of their e-commerce strategy and operations, most companies settle even meritless patent claims rather than bear the expense or take the competitive risk of gathering and producing this sensitive information.

Likewise, claim construction, the process by which the court decides on the proper definition of disputed terms in the patent, provides little succor to many defendants. Claim construction orders, because they are interlocutory, are not immediately appealable. *Nystrom v. TREX Co., Inc.*, 339 F.3d 1347 (Fed. Cir. 2003). As a practical matter, the defendant who loses a claim construction battle generally cannot remedy an erroneous claim construction until after trial. Suffice it to say, summary judgment is rarely a viable alternative after vague claim terms have been construed. *See, e.g., Transamerica Life Ins. Co. v. Lincoln Nat'l Life Ins. Co.*, 550 F. Supp. 2d 865 (N.D. Iowa 2008) (construing claims for a "method and apparatus for providing retirement income benefits"); *Transamerica Life Ins. Co. v. Lincoln Nat'l Life Ins. Co.*, 2008 WL 4787173 (N.D. Iowa Oct. 27, 2008) (denying motion for summary judgment of non-infringement).

Estimates of the rate of reversal of claim construction orders has been measured from 33 to 71 percent, making it exceedingly difficult, if not impossible, for litigants to make informed decisions about their prospects on appeal. *See* Donna M. Gitter, *Should the United States Designate Specialist Patent Trial Judges? An Empirical Analysis of H.R. 628 in Light of the English Experience and the Work of Professor Moore*, 10 Colum. Sci. & Tech. L. Rev. 169, 171 n.5 (2009); *see also Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1476 & n.4 (Fed. Cir. 1998) (Rader, J., dissenting) ("[O]ne study shows that the plenary standard of review has produced reversal, in whole or in part, of almost 40% of all claim constructions since *Markman* [*v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995) (*en banc*)]) (brackets added). In circumstances in which the central issue in the case – the construction of the vague terms of a business method patent that may, or may not, read on the operation of a company's web site – cannot be finally determined until after a trial and an appeal, and the chance that the district court correctly construed the claims is the equivalent of a coin-flip, rational Internet retailers will find the offer of a license for hundreds of thousands, and perhaps even millions, of dollars, a preferable alternative to the uncertainty and cost of continued litigation.

Furthermore, if an Internet retailer perseveres in the face of the obstacles outlined above – choosing to spend on average $2.5 million to litigate in a far-off forum an amorphous claim that may, or may not, be construed properly – it faces a trial in which the plaintiff claims it is entitled to a "reasonable royalty" (because it has no lost profit damages as a "non-practicing entity"). Hijacking the reasonable royalty analysis for apparatus claims, *see Minco, Inc. v. Combustion Eng'g, Inc.*, 95 F.3d 1109, 1119 (Fed. Cir. 2003) (in patent infringement case involving an infringing product, "reasonable royalty" is calculated using "the percentage of sales or profit likely to have induced the hypothetical negotiators to license use of the invention"), the plaintiff often seeks a percentage of all Internet sales for the past six years and for the future life of the patent. *Cf. Lucent Tech., Inc. v. Gateway, Inc.*, 2009 WL 2902044, *16-17 (Fed. Cir. Sept. 11, 2009) (plaintiff sought 8% of sales revenue of accused software products, *i.e.,* $561.9 million, and was awarded $357.7 million by jury). Even seemingly miniscule percentages claimed by a plaintiff's expert as a "reasonable royalty" result in claimed damages of tens or hundreds of millions of dollars – once again, leading the clear-eyed Internet retailer to settle a patent suit concerning its web site even when it developed its web site entirely on its own, is convinced that such web site does not infringe the patent, and is equally convinced that the patent is invalid as obvious or anticipated by numerous other similar web sites.

In *Lucent*, the Federal Circuit vacated the damages award because "[w]e find it inconceivable to conclude, based on the present record, that the use of one small feature, the date-picker, constitutes a substantial portion of the value of Outlook." *Id.* at *25 (brackets added). In other words, although Lucent sought a percentage of the entire value of Microsoft's popular Outlook email program, the court concluded there was not sufficient evidence to anchor the jury award. *Id.* at *16-33.

Although some Internet retailers may be encouraged by the result in this case, it is more likely that they will draw less comforting conclusions from this litigation. The Federal Circuit did *not* reject the concept of awarding a percentage of all revenue based on alleged infringement by a minor feature in a software program, and the Federal Circuit *did* emphasize that "[c]reating a licensing agreement for patented technology is, at best, an inexact science," and that "[m]ost jury damages awards reviewed on appeal have been held to be supported by substantial evidence." *Id.* at *29 (brackets added). In other words, it was only "based on the present record" that the specific jury award in this specific case was vacated on appeal. *Id.* at *25. Thus, this decision leaves open the possibility on remand that Lucent will introduce sufficient evidence to support its claim of $561.9 million in damages, or that future plaintiffs will seek – and recover – a percentage of all online revenues because an Internet retailer's web site infringes their patent.

More ominously, the *Lucent* case was filed seven years ago, and not only was the case tried to a jury, but the district court rejected virtually all of Microsoft's post-trial motions, the appeals court rejected

Microsoft's invalidity and infringement challenges on appeal, and even though the damages award was overturned for insufficient evidence, the case has been remanded for yet another trial on damages. *Id.* at *1-16, 34; *see also Lucent Tech., Inc. v. Gateway, Inc.*, 580 F. Supp. 2d 1016 (S.D. Cal. 2008) (denying post-trial motions), *affirmed in part, vacated in part, remanded by* 2009 WL 2902044 (Fed. Cir. Sept. 11, 2009). Although Microsoft may be prepared to spend $100 million a year defending itself in patent litigation, Q&A: Microsoft Calls for Reforms to the U.S. Patent System, www.microsoft.com/presspass/features/2005/mar05/03-10PatentReform.mspx (last visited Sept. 30, 2009), and to litigate the *Lucent* case for up to 10 years (including the trial on remand and any possible further appeals), that is not a realistic choice for most Internet retailers. Faced with the prospect of years of uncertain, but certainly expensive, litigation, most Internet retailers will never be able to take advantage of the theoretical defenses identified by the Petitioners as bulwarks against "vague or trivial patents for business methods," namely, the "other requirements of patentability, such as novelty, nonobviousness, and definite claiming." Petitioners' Brief at 16.

Moreover, even the defendants that draw a line in the sand against amorphous and suspect business method patents cannot prevent the same plaintiff which litigated and lost from suing other Internet retailers on the same, rejected, infringement theory. In *Furnace Brook LLC v. Overstock.com, Inc.*, 2006

WL 2792692 (S.D.N.Y. Sept. 27, 2006), the district court had no difficulty construing the claims of U.S. Patent No. 5,721,832 (the "'832 Patent") ("Method and Apparatus for an Interactive Catalog System"), and after concluding that the patent had absolutely nothing to do with the Internet or Overstock's web site, the court granted summary judgment on the grounds of non-infringement. *See Furnace Brook LLC v. Overstock.com, Inc.*, 2006 WL 3078905 (S.D.N.Y. Oct. 26, 2006). The Federal Circuit summarily affirmed. *See Furnace Brook LLC v. Overstock.com, Inc.*, 230 Fed. Appx. 984 (Fed. Cir. 2007).

That, however, is not the end of the story. Although Overstock demonstrated a willingness to defend itself rather than simply knuckling under and taking a license on the grounds that it cost less than the litigation, that has not prevented other "non-practicing entities" from suing Overstock for alleged infringement based on other aspects of the operation of its web site, including a recent suit concerning U.S. Patent No. 6,330,592 B1 ("Method, Memory, Product, and Code for Displaying Pre-Customized Content Associated with Visitor Data"). Likewise, although the district court and the Federal Circuit readily concluded in 2006-2007 that Furnace Brook's patent had nothing to do with the Internet, that has not prevented Furnace Brook from suing – and settling with – other Internet retailers in 2008-2009 for allegedly infringing the '832 Patent. *See* Complaint (Doc. No. 1), *Furnace Brook LLC v. Orbitz, LLC*, Case No. 08-cv-1851 (N.D. Ill. Apr. 1, 2008); Complaint

(Doc. No. 1) *Furnace Brook LLC v. Anna's Linen Co.*, Case No. 08-cv-2121 (N.D. Ill. Apr. 14, 2008); Complaint (Doc. No. 1), *Furnace Brook LLC v. Playboy Enters., Inc.*, Case No. 08-cv-4656 (N.D. Ill. Aug. 15, 2008); Complaint (Doc. No. 1), *Furnace Brook LLC v. Walgreen Co., et al.*, Case No. 09-cv-862 (N.D. Ill. Feb. 11, 2009); Complaint (Doc. No. 1), *Furnace Brook LLC v. Aeropostale, Inc., et al.*, Case No. 09-cv-4310 (N.D. Ill. July 17, 2009). With the cost of settlement substantially less than the cost of winning, few companies are willing to obtain the Pyrrhic victory achieved by Overstock. Thus, rather than drawing lines in the sand, companies are building sand castles to keep out the sea if they choose to contest lawsuits asserting business method patents instead of settling and taking a license.

Even settlement does not bring certainty because another (or even the same) plaintiff can bring suit under one of the other 11,000 similar or overlapping patents allegedly covering the Internet, asserting that they own the rights to some slightly different method of operating a web site. Unlike inventors who practice what they invent, and license their technology for others to use, "non-practicing entities" do not provide the same kind of indemnification to those who take licenses from them because their business model is not developing and selling technology, but rather, buying up and litigating patents. *Cf. Taurus IP, LLC v. DaimlerChrysler Corp.,* 559 F. Supp. 2d 947, 958 (W.D. Wis. 2008) (describing pattern of "non-practicing entities" owned by same principal filing repeated lawsuits against the same defendants, recovering approximately $72.3 million in license fees in 100 separate settlements). To a "non-practicing entity," the willingness of an Internet retailer to settle early is not the end of litigation, but an invitation to the next suit.

In this environment, it is scarcely surprising, according to PACER, that Amazon.com has been sued for patent infringement 131 times, and that other companies with large Internet sales of products one does not ordinarily associate with patent infringement have been repeatedly sued for patent infringement, such as Victoria's Secret (lingerie, 29 patent suits) and Saks Fifth Avenue (men's and women's fashion, 27 patent suits). Virtually every one of these lawsuits has settled. Indeed, since business method patents almost never concern a company's core business, and thus are not worth millions of dollars to contest as a drug patent might be for a drug manufacturer whose signature drug is targeted by a competitor, virtually all such lawsuits settle so long as the license fee is less than the multimillion dollar cost of litigation. Accordingly, Internet retailers collectively spend hundreds of millions of dollars on patent settlements that would be much better spent on innovation, job creation, and job retention, and some or all of this cost gets passed on to the consumer in the form of higher prices – a tax on e-commerce that benefits the few at the expense of the many. A result further removed from the goals of the United States patent laws is hard to imagine.

* * *

"[S]ometimes *too much* patent protection can impede rather than 'promote the Progress of Science and useful Arts[.]' " *Labs. Corp. of Am. Holdings v. Metabolite Lab., Inc.*, 548 U.S. 124, 126 (2006) (Breyer, J., dissenting from dismissal of certiorari as improvidently granted) (brackets added, emphasis in original, and quoting Patent Clause). The confluence of the expanding Internet and burgeoning business method patents following *State Street* confirms the correctness of that observation. Far from promoting the progress of science or the useful arts, such patents impede innovation "by forcing researchers to avoid the use of potentially patented ideas, by leading them to conduct costly and time-consuming searches of existing or pending patents, by requiring complex licensing arrangements, and by raising the costs of using the patented information, sometimes prohibitively so." *Id.* at 127. Ultimately, consumers pay the price through increased costs of products sold on the Internet and through decreased capital available to innovate and improve Internet web sites.

The Federal Circuit properly concluded that the Petitioners' purported invention was not patentable. As a practical matter, however, the Federal Circuit's articulation of the limits on business method patents – requiring a process to be tied to a particular machine or apparatus or to transform a particular article into a different state or being, *see Bilski*, 545 F.3d at 961 – will provide only cold comfort to most Internet retailers sued by "non-practicing entities" who are interested in litigation, not innovation. To restore the "careful balance" between innovation and competition that "the federal patent laws . . . embod[y]," *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 146 (1989) (ellipsis and brackets added), the Court should not only affirm the judgment below, but do so through a rule that cuts off business method patents at the source, making plain that such methods are not patentable.

◆

CONCLUSION

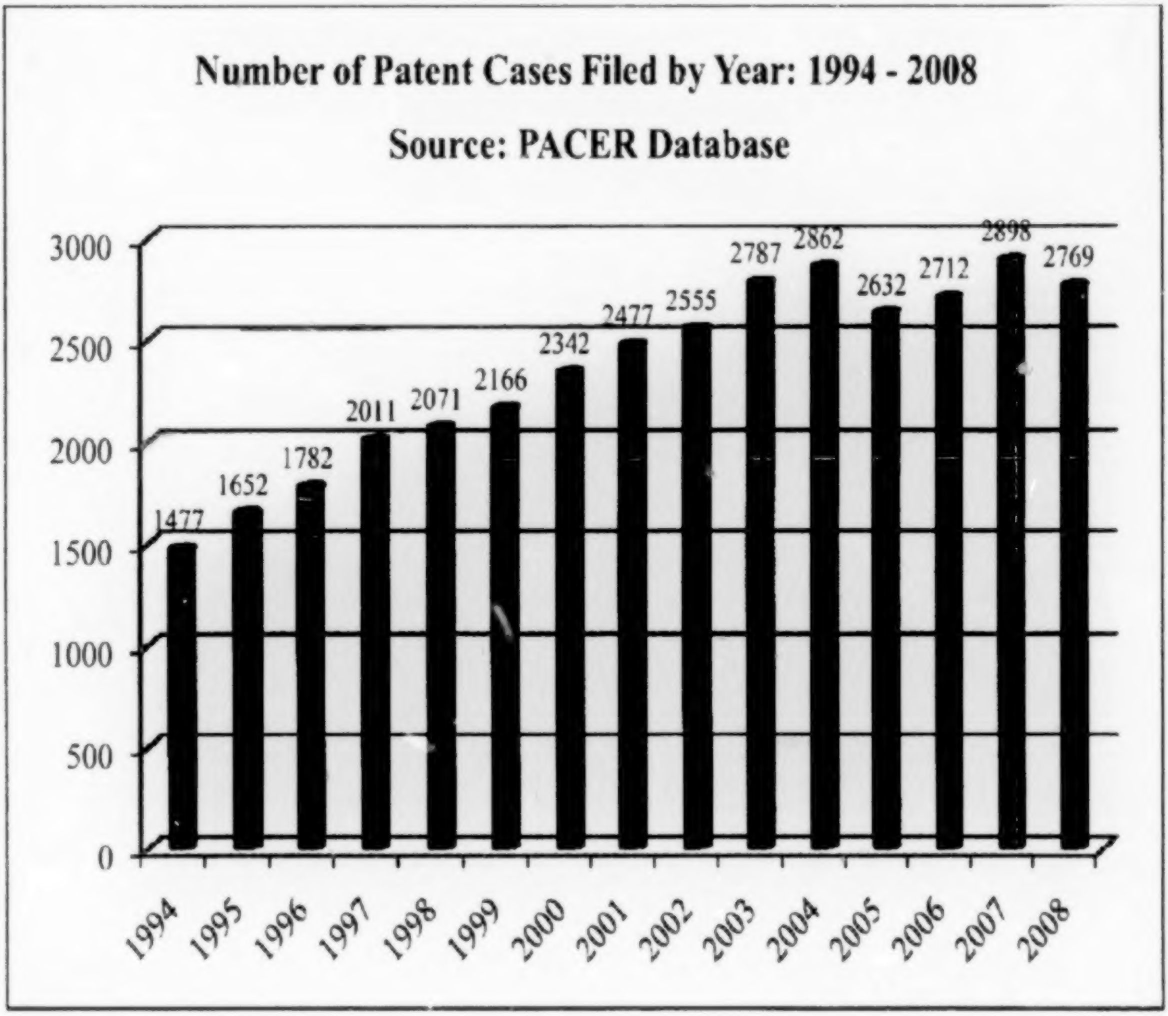
Based upon the foregoing, the Court should affirm the judgment.

Respectfully submitted,

PETER J. BRANN
(*Counsel of Record*)
DAVID SWETNAM-BURLAND
STACY O. STITHAM
BRANN & ISAACSON
184 Main St., P.O. Box 3070
Lewiston, Maine 04243-3070
(207) 786-3566

Attorneys for Amici Curiae

October 1, 2009



Number of Patent Cases Filed by Year: 1994 - 2008

Source: PACER Database

Figure 1

Number of Patent Cases Filed by Jurisdiction: 1994 - 2008

Source: PACER Database

Year	E.D. Tex.	S.D.N.Y.	N.D. Cal.	C.D. Cal.	D. Del.	N.D. Ill.	W.D. Wis.
1994	6	60	83	147	33	86	17
1995	5	65	108	130	59	92	19
1996	9	80	115	162	49	126	20
1997	10	76	153	166	62	115	27
1998	19	67	158	193	89	113	21
1999	13	87	153	227	84	136	17
2000	20	102	156	268	98	148	16
2001	30	142	145	267	139	134	19
2002	32	105	197	247	117	186	16
2003	56	128	171	404	137	144	26
2004	106	149	176	292	147	168	33
2005	157	133	184	248	126	144	19
2006	259	119	148	272	146	131	23
2007	368	106	135	334	164	143	50
2008	316	117	166	214	173	150	43
Total	**1,406**	**1,536**	**2,248**	**3,571**	**1,623**	**2,016**	**366**
Average	**94**	**102**	**150**	**238**	**108**	**134**	**24**
Post - 2002 Average	**210**	**125**	**163**	**294**	**149**	**147**	**32**

Figure 2

AMICUS
CURIAE
BRIEF

Supreme Court, U.S.
FILED
OCT [illegible]
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No. 08-964

In The Supreme Court of The United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

DAVID KAPPOS, UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR, PATENT AND TRADEMARK OFFICE,
Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF *AMICUS CURIAE* KNOWLEDGE ECOLOGY INTERNATIONAL IN SUPPORT OF RESPONDENT

MICHAEL H. DAVIS
**Counsel of Record*
50 AVENUE A
SUITE 3A
NEW YORK, NY 10009-7364
917-771-0235

Counsel for Amicus Curiae

LEGAL PRINTERS LLC, Washington DC • 202-747-2400 • legalprinters.com

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INTEREST OF *AMICUS CURIAE*[1]

Knowledge Ecology International (KEI) is a not for profit non governmental organization that searches for better outcomes, including new solutions, to the management of knowledge resources, as is described in http://www.keionline.org. KEI is particularly concerned with areas where current business models and practices by businesses, governments or other actors fail to address social needs, and where there are opportunities for sustainable improvements. KEI is, in the strictest sense, a broad-based IP policy research organization, as opposed to some of the more narrowly focused special-interest *amici* that have already submitted briefs. KEI has no financial interest in the outcome of this case.

KEI submits this brief because it is concerned that the Court will gain only a limited perspective from those parties, instead of the long-term view of the consequences of this case necessary to fashion an appropriate remeay. Because the very nature of intellectual property and the Constitutional clause itself, which focuses on the long- instead of the short-term, this case can only be decided appropriately if the entirety of the intellectual property regime is considered as opposed to the particular interests of more narrowly-focused corporate players.

---

[1] Letters of the Parties' general consent to file *amicus* briefs are on file with the Court. This brief was not authored in whole or in part by counsel for any party. No one other than *Amici* and their counsel made a monetary contribution to preparing or submitting this brief.

KEI is an advocate of new incentive and financing models for biomedical innovation and has proposed various mechanisms for stimulating investments and promoting innovation, such as the use of innovation inducement prizes, competitive intermediaries and open source dividends to reward successful investments in medical research and development. Depending upon the context, these approaches function either as alternatives or complements to the grant of a patent monopoly, in the context of a larger environment of systems that support innovation. KEI has an interest in ensuring that the Supreme Court guides patent law in a way that does not stifle innovation, simultaneously respecting the interests of patients and protecting the future of science.

ARGUMENT

THE GOAL OF THE PATENT REGIME IS NOT TO REWARD INVENTORS, BUT TO ENCOURAGE PROGRESS

As this Court has repeatedly admonished, the goal of the intellectual property regime is to promote progress, not to reward individual authors or inventors. This Court has often noted that the inventor is incidental to the patent system, the goal of which is not the inventor's fortuitous monopoly but the invention's overall contribution to the public domain. See *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 349 (1991) ("The primary objective of copyright is not to reward the labor of authors, but 'to promote the Progress of Science and useful

Arts.'") (alteration in original) (citation omitted); *United States v. Paramount Pictures, Inc.*, 334 U.S. 131, 158 (1948) ("The copyright law, like the patent statutes, makes reward to the owner a secondary consideration."); *United States v. Line Material Co.*, 333 U.S. 287, 320 (1948) ("But however that may be, the Constitution places the rewards to inventors in a secondary role. It makes the public interest the primary concern in the patent system."); *Motion Picture Patents Co. v. Universal Film Mfg. Co.*, 243 U.S. 502, 511 (1917) ("This court has consistently held that the primary purpose of our patent laws is not the creation of private fortunes for the owners of patents but is 'to promote the progress of science and useful arts ... .'") (citation omitted); *Kendall v. Winsor*, 62 U.S. (21 How.) 322, 327-28 (1858) ("It is undeniably true, that the limited and temporary monopoly granted to inventors was never designed for their exclusive profit or advantage; the benefit to the public or community at large was another and doubtless the primary object in granting and securing that monopoly."); *Pennock v. Dialogue*, 27 U.S. (2 Pet.) 11, 18 (1829) ("While one great object was, by holding out a reasonable reward to inventors, and giving them an exclusive right to their inventions for a limited period, to stimulate the efforts of genius; the main object was 'to promote the progress of science and useful arts ... .'") (citation omitted).

In the short-term, of course, innovators, and their commercial representatives, strongly desire the economic profits guaranteed by the patent monopoly. But those desirable profits are secondary to the long-term goals of the patent system, which are not to reward innovators, but to assure progress. By definition, therefore, in some areas of innovation, outside the scope of the patent regime, progress will be assured by means other than the patent system. It is not the duty of this Court or of this case, to fashion a test tailored to the needs of industries, which may be outside the scope of what the Framers intended when they limited patents to the "useful arts" as opposed to all of science, and as well, only to inventors, and not all innovators. Such a shortsighted approach, urged on this Court by some of the parties and *amici* may well retard progress, especially in certain areas of medical innovations where the costs of patent system are higher than the benefits, or where alternative methods of rewarding successful innovation achieve superior results.

IN CASES WHERE INAPPROPRIATE GRANTING OF PATENT PROTECTION HINDERS PROGRESS IN THE ARTS AND SCIENCES, IT IS NOT NECESSARY TO FASHION AN OVERLY BROAD DEFINITION OF PATENT SUBJECT MATTER MERELY TO SAVE MEDICAL INNOVATIONS FROM AN IMAGINED AND SPECULATIVE DANGER

The argument that this case requires a broad definition to encourage medical innovation puts the cart before the horse. The patent monopoly is designed to promote the "useful arts," not all of science. The task here is to determine a test that will exclude those areas of economic and research activity that were never intended or should not now be a part of the patent regime. It is therefore relevant to note that certain medical innovations were never thought to be a part of the patent regime until very late in the two hundred year history of our nation. For many years after *Morton v. New York Eye Infirmary*, 17 F. Cas. 879 (C.C.S.D.N.Y. 1862), it was assumed "that medical and surgical methods of treating the human body were not patentable processes."[2]

The petitioner as well as some *amici* has argued here that a broad definition of patent eligibility is necessary in order to stimulate investment in the research and development of new products. Some urge that the "machine-or-transformation" test will wreak "havoc" on the biotech industry. (*See, e.g.*, Br. of *Amicus Curiae* of Biotechnology Industry Organization, et al. at 15) Some misread *Diamond v. Chakrabarty*, 447 U.S. 303 (1980) to say that it bars any non-statutory exclusions from patent subject matter (*See, e.g.*, Br. of *Amicus Curiae* Novartis Corporation at 10). Others insist that what are basically savings clauses in Section 287 (a remedies section) are somehow broad assertions of patent scope, which, as remedies provisions, they obviously are not (*See, e.g.*, Br. of *Amicus Curiae* of Georgia Biomedical Partnership, Inc. at 16). Still others insist that anything but the broadest, and possibly improperly broad, test of patentable subject matter would render personalized medicine impossible, ignoring all the myriad other non-patent mechanisms available to stimulate innovation in this area (as well as the fact that medical practitioners already enjoy immunity from patent infringement liability in many cases making those medical patents far less effective at encouraging innovation) (*See, e.g.*, Br. of *Amicus Curiae* of Medtronic, Inc). Still others urge that this Court make special, especially strained, rules of an almost *sui generis* nature in order to protect particular enterprises (*See, e.g.*, Br. of *Amicus Curiae* of Pharmaceutical Research and Manufacturers of America).

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[2] *Chisum on Patents*. §1.03.

Common to each of those arguments is the unstated assertion that patent protection is a necessary policy intervention to reward successful investment in new medical technologies, and the argument that the failure to do so will have severe consequences for innovation.

While it is certainly true that the granting of patents on new medical technologies or discoveries will in some cases provide incentives for such investments, it is also certainly true that the granting of monopolies on discoveries or inventions, and especially innovations outside of the scope of the Constitutional Clause, however defined, presents costs to society, both in terms of high prices for products and also in terms of the restrictions on innovation by others. The design of patent policy by the Congress or the Courts is constrained and informed by this tension. As noted above, the patent regime is constrained by a Constitutional mandate to promote "progress," as opposed to rewarding particular sectors or innovations indiscriminately, including those that are better encouraged through the non-patent mechanisms. It should be noted, also, that many of the greatest medical advances have benefited significantly, and in some cases exclusively, from mechanisms that exist completely outside of the patent system.

Finally, there is very little support for the proposition that the scope of the Patent Statute is, effectively, unlimited. For instance, those who rely on *Diamond v. Chakrabarty* for the proposition that there are no common law limits on the scope of patent subject matter simply misread that case. The Federal Circuit has purported to understand that decision to mean that it is improper for courts to read judicial exceptions into the Patent Act. *State Street Bank & Trust Co. v. Signature Financial Group, Inc,* 149 F.3d 1368. (Fed. Cir. 1998). But in the same breath, the Federal Circuit recognizes exceptions for "laws of nature, natural phenomena, and abstract ideas," even though those are not statutory, but judicial limits derived from *Diamond v. Diehr,* 450 U.S. 175 (1981).

NON-PATENT MECHANISMS CAN, AND ARE SUPPOSED TO, ENCOURAGE PROGRESS IN AREAS WHERE THE GRANT OF A PATENT IS INSUFFICIENT, INEFFECTIVE, BURDENSOME, IRRELEVANT OR UNNECESSARY

A. A host of non-patent mechanisms are already used to encourage research.

The life sciences, as well as other areas of technology and commerce, are not dependent upon patents *per se* to stimulate investments. Policy makers have created a wide variety of mechanisms to protect, reward and induce investments in medical, agricultural, computer, software and other areas of innovation.

One policy intervention that is common to all areas concerns trade secret protection, which is enforced both through contracts and civil litigation, and in criminal statutes.[3] See *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470 (1974). The role of trade secrets in protecting medical products is particularly important in the areas of medical diagnostic technologies, and biotechnology drugs.[4] As explained below, new medicines and vaccines are also protected by a plethora of *sui generis* intellectual property regimes that do not depend upon evidence of invention.

One important non-patent mechanism is the Orphan Drug Act[5] which provides for seven years of exclusive rights to sell a medicine, for certain ailments.[6] In addition to the seven-year period of exclusive rights, the Orphan Drug Act offers a system of grants and tax subsidies for the development of such products. Most importantly, the Orphan Drug Tax Credit allows investors to recoup 50 percent of qualified research and development expenditures in the form of lower taxes on income from other products.[7]

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[3] THEFT OF TRADE SECRETS, 18 U.S.C. § 1832; ECONOMIC ESPIONAGE, 18 U.S.C. § 1831.

[4] Iraj Daizadeh et al., *A general approach for determining when to patent, publish, or protect information as a trade secret*, 20 NAT BIOTECH 1053-1054 (2002).

[5] PROTECTION FOR DRUGS FOR RARE DISEASES OR CONDITIONS, 21 U.S.C. § 360CC.

[6] Marlene Haffner, *Adopting Orphan Drugs -- Two Dozen Years of Treating Rare Diseases*, 354 NEW ENGLAND JOURNAL OF MEDICINE (2006).

A separate form of exclusive rights concerns test data used to register new medicines with the Food and Drug Administration. Before a new drug is introduced into the market, evidence of its safety, effectiveness and quality must be provided to the national drug regulatory authorities. Such evidence includes data from clinical trials involving humans, the most expensive element of drug development. Originators of products receive a time-limited monopoly to rely upon the evidence given to a regulatory body. After this time-limited monopoly expires, a generic drug company may rely on the test data submitted by others.[8] There are many economic, practical and ethical reasons why a generic entrant into the pharmaceutical market will not attempt to reproduce the test data. The tests are expensive, often take several years to complete, and the replication of the trials will in important cases violate ethical rules against repeating experiments on humans.[9] These protections are so strong that they prevented any generic competition for the unpatented blockbuster cancer drug Taxol, until the FDA data exclusivity period expired.[10] Like the Orphan Drug Act exclusivity discussed above, these rights are not tied to inventive activity, and reward investment in product development completely outside of the patent regime.

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[7] Clinical testing expenses for certain drugs for rare diseases or conditions, 26 U.S.C. § 45C.

[8] DRUG PRICE COMPETITION AND PATENT TERM RESTORATION ACT OF 1984, 21 U.S.C. § 355 ET SEQ.

[9] Judit Rius Sanjuan, James Love & Robert Weissman, *Protection of Pharmaceutical Test Data: A Policy Proposal*, KEI RESEARCH PAPER 2006:1.

There are regulatory monopolies associated with investments in the testing of medicines on children. Under Section 505A of the Federal Food, Drug, and Cosmetic Act, the FDA is required to grant six-month extensions of other marketing exclusivity regimes, including those related to patents or test data protections, as a reward for investments in studies on pediatric patients.[11] Through September 2009, 161 drugs had received pediatric extensions.

In the area of agriculture innovation, the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)[12] provides for a period of exclusive rights, followed by a period where remuneration based upon cost sharing is required, for purposes of relying upon test data for regulatory approval of certain agricultural chemicals. The U.S. also provides for a certificate of plant variety protection,[13] which

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[10] Jordan Goodman & Vivien Walsh, The Story of Taxol: Nature and Politics in the Pursuit of an Anti-Cancer Drug (1 ed. 2001).

[11] Robert Steinbrook, *Testing Medications in Children*, 347 New England Journal of Medicine (2002).

[12] Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 U.S.C. § 136 et seq.

[13] Plant Variety, 7 U.S.C. (Ch. 57) 2321 et seq.

provides 25 years of exclusive rights, subject to several special limitations and exceptions, including compulsory licensing in certain cases.
Each of the *sui generis* mechanisms have features that are different from patents, including for example, different periods of exclusive rights (from six months to 25 years), the possibility to use a resource subject to cost sharing or remuneration, or various requirements or rights of third parties to use of data or information for certain purposes, including for research or government use.

Developers of new medicines, diagnostic devices and other technologies also benefit from extensive federal, state and local government subsidies in terms of grants, low interest rates, or tax concessions. Recently the Office of Budget and Management asked Congress to approve $31 billion in spending at the National Institutes of Health (NIH) for fiscal year 2010, plus other significant spending programs at other federal agencies. NIH spending includes extensive investments in all phases of drug development, including Phase I, II and III stage human use clinical trials.

> B. New proposals are being designed to encourage research in areas where the incentives normally associated with strong patents rights are not considered sufficient, efficient, practical, fair, or relevant.

In addition to the instruments described above, several new approaches are under consideration by policy makers to stimulate, subsidize and reward investment in medical research and development. These proposals are diverse.

Advanced marketing or purchase commitments have been proposed for a variety of product development needs, including new drugs and vaccines for developing countries[14] or defense against bioterrorism.[15] A novel "priority review voucher" has been implemented for the development of new medicines that treat certain neglected diseases in developing countries,[16]

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[14] O. Barder, M. Kremer & R. LeVine, *Making Markets for Vaccines: Ideas to Action*, CENTER FOR GLOBAL DEVELOPMENT (2005); M. Kremer, *Creating markets for new vaccines. Part I: rationale*, INNOVATION POLICY AND THE ECONOMY 35-72 (2000); M. Kremer, *Creating Markets for New Vaccines. Part II: Design Issues*, INNOVATION POLICY AND THE ECONOMY 73-118 (2000); O. Barder & N. Birdsall, *Rescuing the MDGs: Paying for results*, 20 *in* PRESENTATION AT THE FIGHTING WORLD POVERTY CONFERENCE, NEW YORK UNIVERSITY, 15TH SEPTEMBER, AVAILABLE AT HTTP://WWW. CGDEV. ORG/DOC/COMMENTARY/BIRDSALL/MDGSPEECHSEP14. PDF, LAST ACCESSED 06 (2005); M. Kremer & R. Glennerster, *Strong medicine: creating incentives for pharmaceutical research on neglected diseases*, 6 EMBO REPORTS 1-21 (2005).

[15] J. Matheny et al., *Incentives For Biodefense Countermeasure Development*, 5 BIOSECURITY AND BIOTERRORISM: BIODEFENSE STRATEGY, PRACTICE, AND SCIENCE 228-238 (2007).

[16] D. B. Ridley, H. G. Grabowski & J. L. Moe, *Developing drugs for developing countries*, 25 HEALTH AFFAIRS 313-324 (2006); AS Kesselheim, *Priority Review Vouchers: An Inefficient and Dangerous Way to Promote Neglected-Disease Drug Development*, 85 CLIN PHARMACOL THER 573-575 (2009).

In 2008, the World Health Organization agreed that:

> Proposals should be developed for health-needs driven research and development that include exploring a range of incentive mechanisms, including where appropriate, addressing the de-linkage of the costs of research and development and the price of health products and methods for tailoring the optimal mix of incentives to a particular condition or product with the objective of addressing diseases that disproportionately affect developing countries.[17]

There is considerable interest in the use of innovation inducement prizes, not only for development of medical products, but innovations in the areas of agriculture, the environment and climate change, and software development.[18]

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[17] Global strategy and plan of action on public health, innovation and intellectual property, WHA61.21, Adopted by the World Health Assembly on May 24, 2008.

[18] James Love & Tim Hubbard, *The Big Idea: Prizes to Stimulate R&D for New Medicines*, 82 CHICAGO-KENT LAW REVIEW 1521-54 (2007); James Love & Tim Hubbard, *Prizes for Innovation of New Medicines and Vaccines*, Vol. 18 ANNALS OF HEALTH LAW 155-186 (2009); Brian D. Wright, *The Economics of Invention Incentives: Patents, Prizes, and Research Contracts*, 73 THE AMERICAN ECONOMIC REVIEW 691-707 (1983); Burton Weisbrod, *Solving the Drug Dilemma*, WASHINGTON POST, August 22, 2003, at A21; T. KALIL, HAMILTON PROJECT & BROOKINGS INSTITUTION, PRIZES FOR TECHNOLOGICAL INNOVATION (2006); Bruce G. Charlton, *Mega-Prizes in Medicine: Big Cash Awards May Stimulate Useful and Rapid Therapeutic Innovation*, 68 MEDICAL HYPOTHESES 1-3 (2007); L. BRUNT, J. LERNER & T.

The use of innovation inducement prizes is particularly relevant to the instant case, because many of the proposals for innovation are designed to overcome well known flaws of the patent system, including its inability to reward investments in products that are not protected by patents, or where it is impractical, inefficient or otherwise harmful to enforce the exclusive rights of a patent. It is the nature of scientific progress and innovation that patents can only appropriate some of the value of an innovation, and the restriction of uses of inventions can cause considerable economic waste, pose ethical

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NICHOLAS, INDUCEMENT PRIZES AND INNOVATION. CAMBRIDGE, MA: HARVARD BUSINESS SCHOOL (2008); Selected Innovation Prizes and Reward Programs, 2008 KEI RESEARCH NOTES (2008); K. DAVIDIAN, PRIZES, PRIZE CULTURE, AND NASA'S CENTENNIAL CHALLENGES (2004); Julien Pénin, *Patents versus ex post rewards: A new look*, 34 RESEARCH POLICY 641-656 (2005); J. G. Morgan, *Inducing Innovation Through Prizes*, 3 INNOVATIONS: TECHNOLOGY, GOVERNANCE, GLOBALIZATION 105-117 (2008); Matheny et al., *supra* note___; W. A. Masters, *Prizes for innovation in African agriculture: a framework document*, DEPARTMENT OF AGRICULTURAL ECONOMICS, PURDUE UNIVERSITY AND CENTER ON GLOBALIZATION AND SUSTAINABLE DEVELOPMENT, THE EARTH INSTITUTE AT COLUMBIA UNIVERSITY), 39 PP. AVAILABLE AT WWW. EARTH. COLUMBIA. EDU/CGSD/PRIZES (2004); Joseph E. Stiglitz, *Scrooge and Intellectual Property Rights: A Medical Prize Fund Could Improve the Financing of Drug Innovations*, 333 BRITISH MEDICAL JOURNAL 1279-1280 (2006); Ron Marchant, *Managing Prize Systems: Some Thoughts on the Options*, 2 KNOWLEDGE ECOLOGY STUDIES (2008); James Love, THE ROLE OF PRIZES IN DEVELOPING LOW-COST, POINT-OF-CARE RAPID DIAGNOSTIC TESTS AND BETTER DRUGS FOR TUBERCULOSIS (2008), http://www.keionline.org/misc-docs/Prizes/prize_tb_msf_expert_meeting.pdf.

dilemmas, or discourage collaboration, the sharing of knowledge, materials and technologies, and other elements important for innovation.

In areas where the unhindered freedom to innovate is essential for growth in science, for example, in the interpretation of data or in certain other methods of medical diagnosis, patents are an inferior mechanism to stimulate innovation.[19] It would, in other words, do more harm than good if this Court tailored a test designed, and, importantly, strained, to achieve a particular and Constitutionally unsanctioned social policy relying upon the false assertion that patent mechanisms are the only available instrument to reward successful investments or otherwise stimulate innovation. More importantly, the very existence of these new proposals and mechanisms is evidence that the sky is not in danger of falling on medical research and that those areas which might legitimately lie outside the scope of the patent regime will not go unattended to by other measures. And, indeed, the delicate balance that the patent regime has always employed to determine the exact scope of subject matter will not be maintained if it is upset by speculative dangers that are already being accommodated by both old and new mechanisms alike.

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[19] JOHN SULSTON & GEORGINA FERRY, THE COMMON THREAD (2003); Aaron S. Kesselheim & Jerry Avorn, *University-Based Science and Biotechnology Products: Defining the Boundaries of Intellectual Property*, 293 JAMA 850-854 (2005).

C. Global norms for intellectual property provide considerable national discretion in terms of determining the criteria for patentable subject matter, or in providing exceptions to those rights.

With the adoption of the World Trade Organization (WTO) Agreement on Trade Related Aspects of Intellectual Property Rights (the TRIPS Agreement), WTO members have agreed to abide by certain norms, including under Article 27 of the TRIPS to provide patents in all fields of technology, without discrimination. WTO members retain, however, considerable discretion in implementing these obligations, including importantly in defining the standards for granting patents, the exceptions to patent rights, [20] and to some degree, patentable subject matter, as it relates to the issue of what is an invention, and what is "capable of industrial application." As a practical matter, there is considerable divergence in terms of state practice in several areas, including patent policy in the areas of medical and agriculture technologies, software, patenting of genes, and other topics, [21] and the Court has the freedom to chart its own course in the instant case, particularly as regards to patentable subject matter.

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[20] Articles 27.2 and 27.3, and Articles 30, 31 and 44.2. of the TRIPS Agreement.

[21] UNCTAD-ICTSD, RESOURCE BOOK ON TRIPS AND DEVELOPMENT (2005).

CONCLUSION

The patent system plays an important role in the economy[22], but patents are not the only instrument available to policy makers to stimulate or reward investments in the development of new products and services. In areas where patents are not available, relevant, or where they impose excessive costs on society, policy makers have ample options to fashion non-patent incentive mechanisms or subsidies. Patents should only granted and their rights extended and enforced in areas where the benefits of doing so exceed the social costs, and where no superior alternative mechanisms exist -- as the balance struck by the Constitutional Clause was intended to accomplish.

The area of medical innovation is one of the most vexing areas of innovation policy. On the one hand, persuasive claims are made regarding the need to stimulate investments in new discoveries and technologies, including those relating to the interpretation of data. However, any measures that create legal barriers to the diagnosis or treatment of an illness, or to research to find new tools to combat illnesses, present enormous risks and costs to society. To the extent that patents are not available or enforced in a particularly area of medical care, policy makers have demonstrated keen insights into the many different ways that incentives can be fashioned, including methods that are less harmful to science and patient interests than legal monopolies on processes or uses of data.

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[22] Michael H. Davis, *Patent Politics*, 56 S.C. L. Rev. 337 (2004)

Respectfully submitted,

Michael H. Davis
Counsel of Record
50 Avenue A
Suite 3A
New York, New York 10009
Telephone: (917) 771 0235

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CURIAE
BRIEF

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IN THE
Supreme Court of the United States

BERNARD L. BILSKI and RAND A. WARSAW,

Petitioners,

v.

DAVID J. KAPPOS, UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR, PATENT AND TRADEMARK OFFICE,

Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF FOR AMICUS CURIAE MARK LANDESMANN IN SUPPORT OF AFFIRMANCE

MARK LANDESMANN
564 Santa Rita Avenue
Palo Alto, CA 94301
(650) 798-5443

Pro se Amicus Curiae

October 2, 2009

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STATEMENT OF INTEREST[1]

I am an entrepreneur with a diverse operational and industry background. In the 1990's, I built a group of companies trading foodstuffs, such as fruit juice concentrates, dried foods, and canned foods, primarily between Eastern Europe, Latin America and the United States. To break into new markets, I designed and implemented processes and structures that reduced the financing cost associated with the production and delivery of these products.

In 1999 and 2000, I was part of the senior management team of Cybergold, an internet incentive advertising company whose primary mission was implementation of the concepts disclosed in business method patent U.S. Patent No. 5,855,008 (Inventors: Nat Goldhaber and Gary Fitts). At Cybergold, I was in charge of running the company's email subscription program, which was the primary way by which the company's approximately three million more active members interacted with the Cybergold service. I was also responsible for the company's relationships with its major accounts. The company went public and merged with another company with a similar business model, MyPoints, now part of United Online, Inc.

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[1] In accordance with Supreme Court Rule 37, I state that this brief was not authored, in whole or in part by counsel to a party, and that no monetary contribution to the preparation or submission of this brief was made by any person or entity other than myself. Petitioners and Respondents have consented to the filing of this brief through blanket consent letters filed with the Clerk's Office.

I am the patentee and majority owner[2] of one issued and several pending business method patents (primary classification in class 705). Due to the very strict and time-intensive review of business method patents at the Patent Office that has been in place since March of 2000, I have incurred significant expenses and delays in prosecuting this portfolio.

(Separately, I am the patentee and majority owner[3] with respect to a portfolio of three issued and two pending software patents in the field of anti-spam technology. These issued and pending patents reflect an approach to the problem of spam emails, which has been described by major technology companies as a leading solution to that problem.)

The doubts surrounding patent-eligibility may impede my ability to prosecute and license the business method patents in my portfolio and have magnified the risks associated with starting up businesses based on a patented process. I believe that clarity in this area is extremely important, but I further believe that the Federal Circuit's "machine-or-transformation" test is a step in the wrong direction.

I hold an MBA from Harvard Business School, which I obtained on a full scholarship, and an M.A. in International Policy Studies as well as a B.A. in Economics from Stanford University. Stanford's International Policy Studies program focuses on the making of domestic and international governmental and corporate policies. I am not an attorney and have not been schooled in patent law (or any other area of the law).

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[2] My ownership is through holdings in a company that is the assignee of this portfolio.

[3] *Id.*

SUMMARY OF THE ARGUMENT

Regarding the patent-at-issue in this case, this brief supports the affirmance, at least in-part, of the Patent Office's rejection, but on different grounds than those cited by the Patent Office.

First, this brief argues that the 1952 Patent Act, as interpreted by subsequent case law, establishes that business method processes are eligible for patent protection. Business method patents therefore should be held eligible by this Court, regardless of whether or not such patents might be deemed to be beneficial to society.

Second, this brief demonstrates that no persuasive evidence supports the notion that business method patents are not beneficial to society.

Third, this brief reviews the patent eligibility of claim 1 of the Bilski patent application and finds it ineligible because it is an expression of an abstract idea.

Fourth, this brief argues that the Court should not *a priori* hold some fields of research inquiry as more deserving of patent protection than others.

ARGUMENT

I) THE FEDERAL CIRCUIT'S MACHINE-OR-TRANSFORMATION TEST IS UNDULY RESTRICTIVE AND INCONSISTENT WITH THE STATUTORY DEFINITION OF "PROCESS"

A. Rebuttal of the Federal Circuit's Opinion

As properly interpreted, the word "process" within the 1952 Patent Act encompasses any process within the useful arts. The Federal Circuit's machine-or-transformation test is unduly restrictive and inconsistent with the definition of "process" as defined within the 1952 Patent Act and as that word has been construed in the decisions of this Court.

Patent-eligible subject matter is defined as follows in 1952 Patent Act ("the Patent Act"):

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C §101

The 1952 Patent Act expressly defines term "process" as follows:

> The term "process" means process, art or

> method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.

35 U.S.C. §100(b)

Because of a perceived writing flaw, the Federal Circuit disregards this definition in its analysis of the boundaries of patent eligibility for processes:

> ...provision [35 U.S.C. §100(b] is unhelpful given that the definition itself uses the term "process."

Bilski, 545 F. 3d at 951, n.3.

It violates common sense to exclude the statute's very definition of the word "process" from an assessment of what the statute's intended meaning of that term was. In fact, it is the very circularity of that definition that shows that the statute meant to define "process" broadly. Clearly, what is meant is that the definition of "process", as applicable to the statute, includes what would normally be known as a process (under common usage) and, additionally, that which falls within the definition of the other enunciated categories.

The Federal Circuit then turns to U.S. Supreme Court precedent and construes those precedents as prohibiting patents that do not meet the machine-and-transformation test that the Federal Circuit has coined. That test declares a claimed process to be patent-eligible if: "(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing."

In re Bilski, 545 F.3d 945, 954-55 (Fed. Cir. 2008).

The Federal Circuit relies primarily on *Gottschalk v. Benson*, 409 U.S. 63 (1972), *Parker v. Flook*, 437 U.S. 584 (1978) and *Diamond v. Diehr*, 450 U.S. 175 (1981) to argue that the Supreme Court has enunciated this test, and holds that it should be applied as a firm requirement and marker of the boundaries of patent eligibility with respect to processes. However, those cases stand for the proposition that the machine-or-transformation test is only a clue to the patent-eligibility of a process and not the solely determinative criteria.

In fact, the Federal Circuit concedes that *Benson* and *Flook* did not mean the machine and physical transformation prongs to be the solely determinative criteria for that eligibility. Both *Benson* and *Flook* explicitly state that business method patents on inventions not meeting the machine-or-transformation requirement can be allowed. The Federal Circuit acknowledges and cites the relevant excerpts:

In *Benson*:

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing.' We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.

Benson, 409 U.S. at 71.

In *Flook*:

> "As in Benson, we assume that a valid process patent may issue even if it does not meet [the machine-or-transformation test]."

Flook, 437 U.S. at 589 n.9 (emphasis added by the Federal Circuit).

The Federal Circuit dismisses these quotations as a mere "caveat", but they are more than just that, and stand in direct contradiction to the use of the machine–and-transformation test for determining the boundaries of patent eligibility.[4] Using the machine-or-transformation test to include inventions that do pass the test is very different from using the test to exclude those inventions that do not. In *Benson* and *Flook*, the Supreme Court explicitly endorsed the former, and explicitly rejected the latter.

The Federal Circuit bases its decision to disregard the above cited statements in *Benson* and *Flook* primarily on the following aspects of *Diehr* and *Benson*: First, the Federal Circuit claims that the *Benson*/*Flook* "caveat" statements were undone by the following sentence in *Benson*:

> "Transformation and reduction of an article 'to a different state or thing' is the

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[4] In the context of their respective cases, the statements *were* caveats, because the cautioned the reader not to draw conclusions about the boundaries of patent eligibility.

> clue to the patentability of a process claim that does not include particular machines."

Bilski, quoting *Benson,* 409 U.S. at 70 (emphasis added by the Federal Circuit).

However, the above *Benson* excerpt clearly shows that "*the* clue" was not meant to be understood as "*the one and only, and final,* clue," and no added emphasis can be emphatic enough to outweigh that clear and unambiguous explanation.

Second, with respect to *Diehr,* the Federal Circuit argues that the supposed caveats in *Flook* and *Benson* were not repeated there, but that the "clue to patentability" sentence in *Benson* was.

But *Diehr* does more than this: it does cite the clue-to-patentability sentence, but only as a follow-on to *a* recitation of the much earlier definition of process in *Cochrane v. Deener,* 94 U.S. 780 (1877). This portion of *Diehr* reads as follows:

> Although the term "process" was not added to 35 U.S.C. §101 until 1952, a process has historically enjoyed patent protection because it was considered a form of "art" as that term was used in the 1793 Act. In defining the nature of a patentable process, the Court stated:
>
> "That a process may be patentable, irrespective of the particular form of the instrumentalities used, cannot be disputed. . . . A process is a mode of treatment of certain materials to produce a given result.

It is an act, or a series of acts, performed upon the subject matter to be transformed and reduced to a different state or thing. If new and useful, it is just as patentable as is a piece of machinery. In the language of the patent law, it is an art. The machinery pointed out as suitable to perform the process may or may not be new or patentable; whilst the process itself may be altogether new, and produce an entirely new result. The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence."

Cochrane v. Deener, 94 U. S. 780, 94 U. S. 787-788 (1877).

Analysis of the eligibility of a claim of patent protection for a "process" did not change with the addition of that term to § 101. Recently, in *Gottschalk v. Benson*, 409 U. S. 63 (1972), we repeated the above definition recited in *Cochrane v. Deener*, adding:

"Transformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines."

Diehr 450 U.S. 175 at 192 (footnote omitted).

Making the clue-to-patentability sentence a part of the *Cochrane* definition of process moves the machine-or-transformation test closer to fulfilling the normal function of a clue: it is an investigative tool, not an absolute requirement or boundary. In this context, the machine-or-transformation test is an important and central clue, the clue that stands apart from lesser clues, but a clue nevertheless.

The context of the clue-to-patentability sentence in *Diehr* is also important, because the *Cochrane* definition appears more expansive, and less rigid, than the machine-or-transformation test by itself. For instance, with respect to the transformation prong of the machine-or-transformation test, it is an "article" that needs to be transformed. No "explicit definition" of article is given, but the *Cochrane* definition of things that can be transformed, ("substance", "subject matter") appears to lend a broader, clearer, and more flexible meaning and definition to "article" than is reflected in the examples given in the Federal Circuit's opinion.

Summarizing the rebuttal of the Federal Circuit's argument, the definition of "process" in the 1952 Patent Statute is not made irrelevant by the definition's perceived writing flaw. With respect to the applicable Supreme Court case history, the *Flook* and *Benson* statement that process patentability should not be restricted to inventions that meet the machine-or-transformation test is clear, strong, and unambiguous. That statement is not negated by its non-repetition in *Diehr*, nor by the "clue to patentability" sentence in *Benson*.

B. Rebuttal of the concurrence

The concurring opinion of Judge Dyk and Judge Linn offers a further reason for disregarding the Patent Act's definition of process. The concurrence argues that we must go back to the 1793 Patent Act to understand the definition of process, because the Supreme Court has held that the 1952 Patent Act did not change that definition. As explained in the Concurrence, the 1952 Patent Act can therefore be disregarded for the purpose of interpreting the meaning and scope of "process."

Based on the work of Edward C. Walterscheid, who stated in THE EARLY EVOLUTION OF THE UNITED STATES PATENT LAW (Antecedents (Part 1), 76 J. Pat. & Trademark Off. Soc'y 697, 698 (1994) that "[T]he English common law relating to patents was what was best known in the infant United States," the concurrence then reviews contemporaneous and preceding British patent law and practice to support its contention that a process not involving manufactures, machines or compositions of matter was, at the time of the 1793 Act, not intended to be patentable subject matter.

The concurrence explains, that

> [t]he criteria for patentability established by the 1793 Act remained essentially unchanged until 1952, when Congress amended § 101 by replacing the word "art" with "process" and providing in § 100(b) a definition of the term "process." The Supreme Court has made clear that this change did not alter the substantive

> understanding of the statute; it did not broaden the scope of patentable subject matter.[2] Thus, our interpretation of § 101 must begin with a consideration of what the drafters of the early patent statutes understood the patentability standard to require in 1793. *See Diehr*, 450 U.S. at 182-83 (looking to the 1793 Act).

Bilski, at 966-967 (Dyk, J. and Linn, J., concurring).

The concurrence cites *Diehr* for support ("a process has historically enjoyed patent protection because it was considered a form of 'art' as that term was used in the 1793 Act"). However, the relevant *Diehr* citation, in its full context, reads as follows:

> In cases of statutory construction, we begin with the language of the statute. Unless otherwise defined, "words will be interpreted as taking their ordinary, contemporary common meaning," *Perrin v. United States*, 444 U. S. 37, 444 U. S. 42 (1979), and, in dealing with the patent laws, we have more than once cautioned that "courts *should not read into the patent laws limitations and conditions which the legislature has not expressed.'" Diamond v. Chakrabarty, supra, at* 447 U. S. 308, *quoting United States v. Dubilier Condenser Corp.*, 289 U. S. 178, 289 U. S. 199 *(1933).* The Patent Act of 1793 defined statutory subject matter as "any new and useful art, machine, manufacture or composition of matter, or any new or useful

> improvement [thereof]." Act of Feb. 21, 1793, ch. 11, § 1, 1 Stat. 318. Not until the patent laws were recodified in 1952 did Congress replace the word "art" with the word "process." It is that latter word which we confront today, and, in order to determine its meaning, we may not be unmindful of the Committee Reports accompanying the 1952 Act which inform us that Congress intended statutory subject matter to "include anything under the sun that is made by man." S.Rep. No.1979, 82d Cong., 2d Sess., 5 (1952); H.R.Rep. No.1923, 82d Cong., 2d Sess., 6 (1952). Although the term "process" was not added to 35 U.S.C. § 101 until 1952, a process has historically enjoyed patent protection because it was considered a form of "art" as that term was used in the 1793 Act.

Diehr, 450 U.S. 175, 182 (1981) (the underlined emphasis was added; the other emphases were in the original).

The full excerpt, with its reference to "anything under the sun that is made by man", hardly appears to be an endorsement for disregarding the 1952 Patent Statute's definition of "process," nor does the above excerpt otherwise state or imply that the 1952 Patent Act can be disregarded in determining the scope of that definition. It should be noted that Diehr's "anything under the sun" reference is separately criticized by Judges Dyk and Mayer, in their respective opinions, as being out of context and misleading (fairly, I believe). But the preceding excerpt nevertheless makes it clear that the 1952 Patent Act was indeed very relevant to the determination of whether or not the Diehr invention constituted a patent eligible process.

The Supreme Court did not hold the 1952 Patent Act to be irrelevant to the determination of the scope of "process", and the statute indeed speaks for itself: when the term "art" is replaced by the term "process", and a new definition of "process" is added that specifically and explicitly holds that "process" is defined to comprise art *and* several other types of processes, then the definition of the word "process" has, by definition, expanded (beyond arithmetic doubt).

C. Rebuttal of Judge Mayer's argument

In dissent, Judge Mayer adds a further argument in for disregarding the definition of "process" in the 1952 Patent Act in determining business method patent eligibility. He argues that the 1952 Patent Act does not apply, because "business method patents lack (...) constitutional (...) support." *Bilski,* 545 F. 3d at 998 (Mayer, J., dissenting).

The Constitution's Patent Clause reads as follows:

> To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.

Part of Judge Mayer's argument is his contention that the terms "science" and "useful arts" were not meant to comprise business method patents. In originating and interpreting these words, Judge Mayer also relies on British Patent law and practice to explain the probable mindset of the Framers and the meaning they attributed to these words. In particular, he refers to the crown's abusive granting of monopoly powers simply for the purpose of raising revenues or rewarding those it favored, and to the resulting STATUTE OF MONOPOLIES, 21 Jac. 1 c. 3 (1623). Although that 1623 British statute forbade abusive monopolies, it specifically provided for the granting of monopolies to "the true and first inventor" of inventions, subject to other restrictions (ENCYCLOPEDIA BRITANNICA, Entry for "Statute of Monopolies", see http://www.britannica.com). Judge Mayer concludes that "useful arts" can best be defined by the word Technology (the exclusion of business methods in that definition, although unusual by today's standards,[5] is implicit to his argument).

Admittedly, it is possible that the pre-1623 abuse of monopolies may have directly or indirectly had an impact on the mindset of the Framers, and created a psychological policy bias against the granting of monopolies, even against those granted for a benign purpose.

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[5] *See*, for instance, the definition of "technology" in *Industry, Technology and the Global Marketplace: International Patenting Trends in Two New Technology Areas"*, *SCIENCE AND ENGINEERING INDICATORS, 2002*. National Science Foundation.

But more importantly, rather than originating and defining the terms "science" and "useful arts" by looking, on either side of the argument, for potential unarticulated, and perhaps even subconscious, biases or predispositions on the part of the Framers, it seems far more expedient to instead interpret the words in the Patent Clause by reviewing the direct evidence on the meaning that was, in fact, attributed to these words at the time that the Constitution was written. Tellingly, Mr. Walterscheid, although he had indeed noted, in a separate context, the British influence on the US Patent system, sees no need to rely on British patent law or practice when he himself originates and interprets the terms Science and Useful Arts in Originating and Interpreting the Words Science and Useful Arts.[6] With respect to the meaning of "useful arts," Mr. Walterscheid offers a wealth of contemporaneous and direct evidence to support the meaning of these words, and concludes:

> The origin of the words "useful arts" can also be plausibly determined. In 1787 "useful arts" meant basically helpful or valuable trades. Thus to promote the progress of "useful arts" presupposed an intent to advance or forward the course or procession of such trades.

Id., page 126.

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[6] Part B of Chapter 4, Parsing the Patent Clause, in The nature of the intellectual property clause: a study in historical perspective

Among other evidence, Mr. Walterscheid cites various dictionary sources,[7] and their interpretation by other authors, the name of a new well-known and well-respected local trade association founded one month before the start of the Constitutional convention ("Pennsylvania Society for the Encouragement Of the Manufactures and of the Useful Arts")[8] as well as letters written by Thomas Jefferson[9] and George Washington.[10]

Mr. Walterscheid further interprets the word "science" to have had "its broadest contemporary meaning", explaining that the title of the 1790 Copyright Act, in its historical context, "indicates that the first Federal Congress equated the term 'science' [...] with 'learning' or its equivalent 'knowledge.'"

Mr. Walterscheid also cites Bernhard Cohen's analysis of the juxtaposition of the terms "science" and "useful arts", in Science and the Founding Fathers, and quotes Cohen's interpretation of "useful arts" as follows:

> '[A]rt' implies a skill 'in doing anything' which is acquired by knowledge or practice, and (...) [it] implies the use of human skill and human workmanship. 'Art' refers to practical methods for 'effecting certain results.' (...) This stress on practice rather than theory explains why the framers of

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[7] *Id.* pages 127 and 128.

[8] *Id.* page 126.

[9] *Id.* page 128.

[10] *Id.* page 126

> the Constitution introduced 'practical arts' rather than simply 'arts'.[11]

Based on Mr. Walterscheid's description, and his summary of the comments of other analysts, it seems clear that the term "useful arts" was, at the time of the Constitutional convention, a modern term used by modern people to communicate a practical, results-oriented focus, and an open-minded, unbiased receptiveness to the unknown streams, forms, and origins of new innovation and inventiveness that the future held.

II) NO RELIABLE EVIDENCE REGARDING THE ALLEGED NEGATIVE SOCIETAL IMPACT OF PATENTS ON NOVEL, NON-OBVIOUS, AND PROPERLY DISCLOSED, BUSINESS METHOD PROCESS INVENTIONS HAS BEEN PRESENTED TO THE COURT.

I believe that the subtext of the new and precedent-breaking interpretation proposed by the Federal Circuit may be an unarticulated belief by some of the judges that business method patents that do not meet the machine-or-transformation test are unfair and less beneficial to society than other patent categories. The 1952 Patent Act has been thoroughly and repeatedly interpreted in the course of the last 57 years by the Supreme Court and by the Court of Appeals. I suspect that the Federal Circuit would see no need for a new, restrictive interpretation, if it had a strong conviction that the eligibility of a wider range of business method processes is essential to the furtherance of progress and innovation.

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[11] *Id.* page 128. Cohen's view of the terms "Science" is narrower than Walterscheid's.

Although the Federal Circuit does not express an opinion as to the public policy implications of curtailing business method process patents, Judge Mayer, in his dissent, articulates his view that business method patents are detrimental to society, and so do a small number of Fortune 100 Amici.[12] Further, business method patents have often been criticized in the media, and also in a small number of articles in academic journals, especially in the years from 1999 to 2003.

A. Reliable and comprehensive studies of business method patents, as a category, do not support the contention that they are inherently less beneficial than other patents.

To test the popular belief that business method patents are, categorically, of inferior quality, studies have been undertaken to objectively and methodically measure that quality. These studies, cited below, found that business method patents were in fact as good, or better, than other patents. Starling Hunter, the author of one of the empirical studies, described, in 2003, the apparent dissonance between the reputation and reality of business method patents:

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[12] See for instance, the IBM Amicus Brief in the present case, as well as the Legal OnRamp brief. (Legal OnRamp was started by the General Counsel of Cisco, and is sponsored by Cisco and others.)

> One of the more striking facts about the controversy surrounding business method patents, especially in the wake of the *State Street* decision, is the manner in which the consensus about these patents' quality appears to have been formed. Contrary to some expectations, the many and varied criticisms and the calls for remedial measures were rarely, if ever, supported with empirical evidence. Rather, it seems that the consensus was reached, in large part, on the basis of expert opinion supported by anecdotal *evidence.* It was *opinion* informed by extensive experience with and a broad understanding of the legal and economic issues attendant to software and internet based technologies, but which also displayed considerable disdain for business method patents themselves, distrust of the motives for and processes by which the patents were evaluated, and dismay at the anticipated consequences of their unchecked proliferation. Further, it was opinion typically supported by *evidence* obtained from the examination of a handful of arguably unrepresentative business method patents, namely those assigned to high-profile internet start-ups (...).The above observations raise the distinct possibility that patents on methods of doing business have been both misjudged

> and prejudged, that remedial measures that have been implemented may not have been necessary, and that legislation specific to these patents might have been passed and/or proposed without a sound basis for doing so.

STARLING HUNTER, *Have Business Method Patents Gotten A Bum Rap? Some Empirical Evidence* (MIT Sloan School of Management, 2003), available at http://ebusiness.mit.edu.

Continuing with the above cited discussion of business method patents, Mr. Hunter writes:

> [W]ith no empirical studies of the quality of business method patents yet published, a systematic and theoretically grounded evaluation of the relative quality of business method patents is as warranted as it is overdue. To that end, I herein develop two hypotheses concerning the quality of business method patents and empirically test them using a random sample of over 3500 data processing patents granted by the USPTO between 1975-1999. In short, I find almost no support for the "conventional wisdom" concerning patents on methods of doing business. Rather, I find that they compare very favorably to other patents on two fundamental dimensions of quality - the number of citations to the "prior art" and on their scope.

Id., Abstract.

In what appears to be the only other comprehensive quantitative study of business method patents, authors John Allison and Emerson Tiller pursue a similar inquiry and find similar results:

> Internet business method patents have been roundly criticized by most observers as being singularly inferior to most other patents. Many have even argued that business methods should not be patentable subject matter. As a result, Congress and the Patent and Trademark Office (PTO) singled them out for special treatment. All of these criticisms were voiced without empirical support. We gathered data on most Internet business method patents issued through the end of 1999 and compared them with a large contemporaneous data set of patents in general. We also compared them with patents in fourteen individual technology areas within the general patent data set. Our comparison focused on several metrics that we believe serve as good proxies for patent quality and value. We found that Internet business method patents appear to have been no worse than the average patent, and possibly even better than most.

See JOHN R. ALLISON AND EMERSON H. TILLER , *The Business Method Patent Myth*, Berkeley Technology

Law Journal, Vol. 18, Fall 2003, available at *www*.ssrn.com/abstract=421980.

B. The empirical evidence presented by business method patent opponents is anecdotal, and as such, inherently unreliable and potentially misleading.

The arguments submitted in the present case regarding the adverse societal consequences of business method patents appear to rely exclusively on anecdotal evidence as the sole empirical basis for the claims that are being made. This is surprising, in part because it has long been known, and been a very basic tenet of scientific research and statistical analysis, that any group, class or category, can easily, and drastically, be misrepresented by simply relying on a few self-selected examples or anecdotes. *See* for instance, MICHAEL SHERMER, *How Anecdotal Evidence Can Undermine Scientific Results,* SCIENTIFIC AMERICAN MAGAZINE, August 2008.

Several academic articles are cited that were written in opposition to business method patents.[13] In most cases, these articles do not present these arguments as proven but rather as new hypotheses that should, ideally, be tested, by subsequent empirical study. In the following three instances, however, the anecdotal evidence is claimed to be more significant and determinative than that.

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[13] See for instance, JAMES S SFEKAS, *Controlling Business Method Patents: How The Japanese Standard For Patenting Software Could Bring Reasonable Limitations To Business Method Patents In The United States,* Pacific Rim Law & Policy Journal. Vol. 16, 197, Seattle, January 2007; or Stephanie L. Valera, *Damned if You Do, Doomed if You Don't: Patenting Legal Methods and Its Affect on Lawyers' Professional Responsibilities*, 60 Fla. L. Rev. 1145 (2008).

Leo Raskind's 1999 article, *The State Street Bank Decision: The Bad Business of Unlimited Patent Protection for Methods of Doing Business*, (10 Fordham Intel. Prop., Media & Ent. L.J. 61) is cited along with its argument that business method patents are unnecessary because of the "substantial anecdotal evidence that competition alone serves as a sufficient spur to innovation in business methods." Raskind, pages 92-93.

What is that anecdotal evidence? Raskind explains:

> The rapid cluster of development in the following businesses casts doubt on the need for the added incentive of patents. Consider the growth of fast food restaurants, self-service gasoline stations, quick oil change facilities, supermarkets for food and office supplies, automatic teller devices and other banking services, electronic fund transfers, supplemental insurance for physician services, and alternatives for long-distance telephone services.

Raskind, page 93.

How exactly the growth in self-service gas stations or quick oil change facilitates supports the conclusion that business method patents did not or would not have spurred innovation at the time of that growth is left unclear. While a complicated chain of assumptions can be constructed that could explain such a link,[14] no empirical evidence specific to business method patents as a category is given by Raskind to support it.

Second, business method opponents make reference to the fact that some participants at Federal Trade Commission hearings on patent policy made negative comments about business method patents, as mentioned in the 2003 Federal Trade Commission (FTC) report TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY (FTC, 2003). (See for instance, the Supreme Court Amicus Curiae Brief by Legal OnRamp in the present case, on page 8.) However, the FTC report itself did not oppose the eligibility of such patents, and specifically and explicitly declined to take a position in this regard. In the interest of obtaining views from a broad cross-section of business and industry, representatives from companies, who had taken a vocal position in opposition to business method patents, and whose business model is adverse to such, and to many other, patents, were among those invited to the hearings. It is therefore not surprising, that some of these participants expressed their opposition to business method patents, and the very fact that negative comments were made is hardly an independent and objective empirical basis for a judicial decision. No other evidence against business method patents is cited in the FTC report.

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[14] First, that business methods were not patentable at the time of that growth (contradicted by the USPTO White Paper in this regard, and Judge Rich's Federal Circuit opinion in State Street). Second, that these particular services would somehow have qualified as patentable based on their novelty and non-obviousness had State Street been decided prior to the beginning of that growth. Third, that these patents would have slowed this growth (Raskind offers references to other non-comprehensive studies in this regard, but those studies did not look at business method patents). Fourth, following Raskind's logic, that, with business method patentability, no new inventions and ideas would have been disclosed that would have improved the provision of these services, which would have attenuated or outweighed that negative impact of these patents. And fifth, that whatever negative effect patents would have had on the growth or cost of these services would not have been outweighed by the beneficial impact of business method patents in other areas. All of these assumptions would have to be true for that evidence to be relevant, and none are shown to be true by Raskind's empirical support.

Third, it was stated that the USPTO is "inundated by business method applications.[15]" This is not a fair characterization of the present state of affairs at the Patent Office. In fact, class 705 business method patent grants in fiscal year 2008 were less than one percent of all USPTO patent grants.[16] And, as illustrated immediately below, the Patent Office has implemented a well-managed program to rigorously

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[15] "*State Street* has launched a legal tsunami, inundating the patent office with applications seeking protection for common business practices." *Bilski,* 545 F. 3d at 1004 (Mayer, J., dissenting).

[16] 0.89%. A total of 185,224 patents were issued, according to U.S. Patent Statistics Chart, Calendar Years 1963 – 2008, http://www.uspto.gov/go/taf/us_stat.htm, of which 1,643 were business method patents according to the USPTO, see http://www.uspto.gov/web/menu/pbmethod/applicationfiling.htm

(and vigorously) evaluate business method applications.

C. The evidence submitted by business method patent opponents does not distinguish between those patents issued *before* the USPTO drastically revised its review of these patents, and those issued *after* that change.

The empirical evidence submitted in opposition to the patent eligibility of certain business method patents does not distinguish between those patents issued before the USPTO implemented, beginning in March 2000, drastic changes in its review of business method applications, and those issued afterwards. That distinction, however, is crucial. If obvious or non-novel patents have been issued due to problems in USPTO patent examination procedure, that should have no bearing on the eligibility of non-obvious and novel patents in that category.

As a consequence of the Patent Office's implementation of its more stringent "Second Pair of Eyes Review" program, the allowance rates in Class 705 declined substantially from 45% in fiscal year 2001 to 11% in fiscal years 2004 and 2005. According to the Patent Office, the allowance rate then increased to approximately 20%, because applicants considerable narrowed their claims.[17] By comparison, the Fiscal Year 2008 allowance rate for all patent classes was approximately 47%.[18]

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[17] Wynn Coggins, Director, Technology Center 3600, slide presentation at the 2007 USPTO Partnership Meeting. 20% was the allowance rate for the first half of FY 2007.

In light of these limitations placed on the issuance of business method patents,[19] it is also highly unlikely that the filing of Class 705 business method applications is yielding greater financial returns than the filing of inventions in other patent classes. Based on the allowance rate, and the types of patents selected and sold by Ocean Tomo, a company which holds public patent auctions,[20] it appears that business method patent fillings fare, on average, far worse than those made on inventions in other patent classes.

D. Widespread infringement has prevented business method and software patents from attaining, and demonstrating, their full societal potential

In evaluating new business ideas and concepts, venture capital and private equity companies first distinguish between those concepts that they believe would significantly and viably improve on what is presently offered in the marketplace, and those that would not. Then, however, comes the more difficult inquiry: whether the business concept is “organic”, i.e. whether it is able to quickly reach critical mass and build a defensible competitive advantage.

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[18] The overall allowance rate for Fiscal Year 2008 was 47.3% according to USPTO News: USPTO Announces "Highest Performance Levels in Agency's History" in 2008, by Donald Zuhn, www.patentdocs.com, November 11, 2008.

[19] For additional data in this respect, please see the dissent of Judge Newman, page 39.

[20] See Ocean Tomo, LLC describes itself as an IP merchant bank. It holds public auction of patents and patent portfolios. It's auction business was recently sold to ICAP, and is now called ICAP Ocean Tomo. See http://www.oceantomo.com.

There are those new technologies that address a particular niche market, where the first mover advantage of a startup that introduces a new solution is often substantial.[21] But the great majority of ideas that address larger opportunities, no matter how ingenuous and useful to the market, are not organic. They require a pre-established and dominant market position, either because the new service can’t be introduced into the market gradually, or because when it is introduced at great expense to the newcomer, defenses can’t be built quickly enough to prevent the onslaught of larger competitors.

Venture capital firms and private equity companies generally do not fund non-organic software or business method solutions, no matter how novel or non-obvious, regardless of the strength of their patent protection and regardless of their ultimate market potential. This is because they assume that large companies will, as a matter of implicit policy, and based on their past behavior, not honor other people’s issued patents. As a general rule, they therefore simply do not fund non-organic applications, even those that would have great potential and that are backed by great teams.

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[21] ROBERT J. CALVIN, *Entrepreneurial Management*, page 78, McGraw Hill, 2002.

Guy Kawasaki, most probably the world's most widely-read startup venture capitalist,[22] cites "Patents make our business defensible" as the single worst answer that an entrepreneur can give when asked what makes her business defensible. He explains:

> As a startup, it's highly unlikely that patents will make your company defensible because you won't have the time or money to do battle with a Microsoft-esque competitor.[23]

Venture capitalists do not expect even the strongest patents on the most novel and useful inventions to deter infringers, because they have not deterred infringement in the past.[24] Infringement prevents startups from penetrating and establishing themselves in the marketplace, and therefore leaves the further development of the startups' technologies in the hands of established incumbents. However, because of their vested interests, these incumbents can neither be expected to fully develop these solutions, nor to compete as well and as aggressively for these solutions as their rightful owners would have, had patent protection been an effective deterrent.

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[22] Kawasaki's biography is on Wikipedia at http://en.wikipedia.org/wiki/Guy_Kawasaki.

[23] How to Change the World: Defensibility, October 25, 2006 entry on Guy Kawasaki's blog at http://blog.guykawasaki.com/#axzz0SgCuR7gx.

[24] Based, also, on my discussions with venture capital companies, and a top investment bank.

For some of the country's largest technology companies to, first, be repeatedly found guilty of defying, and interfering, with the government's attempted protection of patented technologies, and then come before this Court (and before the media), to argue that some of that protection has proven to be socially unbeneficial, requires an amount of chutzpah that can only be explained by the size of their lobbying, legal, and public relations budgets. The true benefit of business method patents will not be known unless and until these patents are enforced and sanctioned to the point where infringement is actually deterred, and new inventions are given the market opportunity that the patent system was designed to afford them.

E. The Bilski case can, itself, be misleading as a §101 test case

The *Bilski* case appears to present the Court with a stark choice: either declare its claimed subject matter ineligible for patent protection, or risk putting an entire industry, and huge swaths of economic activity, at the mercy of the licensing demands of a single patentee. In reality, this dichotomy claimed by business method patent opponents rarely, if ever, applies. In the *Bilski* case, claim 1 is very likely obvious, and, as such, is a poor candidate for a determination of the standards for patentability.

Claim 1 and other claims in the Bilski case were provisionally rejected by the Patent Office for obviousness; a rejection that was withdrawn when the section 101 rejection was first made in the third office action. Claim 1 is so broad, and appears so obvious, recalling (and demonstrating) one's own business experience may itself be sufficient to prove that obviousness. In my case, I learned hedging techniques in my second business school year, in the fall of 1988, well before the Bilski patent application's priority date. I also used hedging techniques to structure so-called back-to-back contracts that I made with suppliers and customers, as part of the operations of the food trading company that I built after my graduation from business school. Some of the contracts were specifically structured to manage "consumption risk" as defined by Bilski.

A simple visit to the website of the Harvard Business School, typing "hedging" into the search box for the school's past publications, reveals that no less than 25 cases and teaching notes have been written on, or with reference to, the subject prior to 1996. *See* www.harvardbusiness.org/search. Bilski's invention focuses on "consumption risk", i.e. the risk associated with not knowing how much of a particular commodity will be needed by the consumer at a particular time. But claim 1's steps do not appear to be different from what would be used when hedging other types of risk. Further, the concept of developing new financial instruments to hedge risk is at least as old as 1952, when it is believed that the concept of a "hedge fund" was first introduced by Alfred Jones. *See* JAMES E. MCWHINNEY, A BRIEF HISTORY OF THE HEDGE FUND, available at www.investopedia.com/articles. I therefore believe that it is highly likely that a thorough and comprehensive review of the prior art would show claim 1 to have been obvious or anticipated at the time of the initial filing.

III) CLAIM 1 OF THE BILSKI PATENT APPLICATION IS INELIGIBLE FOR PATENT PROTECTION.

Pre-Bilski law provides a variety of useful tools and prisms for an evaluation of the patent eligibility of the Bilski invention. In Bilski claim 1, no data are being transformed to produce a useful, concrete and tangible result (*State Street. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, Fed. Cir. 1998). While the third step of the claim mentions such results—the "second fixed rate" of the second series of transactions, and the "balanc[ing of] the risk position" —the steps enunciated in Bilski do not themselves directly contribute to producing these results. Further, there is no "act, or a series of acts, [that is] performed upon [a] subject matter" (*Cochrane*), no transformation of any article (*Benson*) or substance (*Cochrane*) and no tie to a machine (*Benson*). Based on the language of the 1952 statute, and the applicable definitions, I believe the Bilski claim 1 qualifies as an "abstract idea" more than it would belong to the categories "process", "art", or "method", or "new use of a known process, machine, manufacture, composition of matter, or material."

However, I believe claim 1 is a borderline case—one could characterize it as an abstract idea in see-through process clothing. Dependent claims that add steps, which increase the "stability, predictability, and reproducibility" of the invention—terms that the

Yahoo! Amicus Brief in the present case proposes as helpful in distinguishing a process from an abstract idea—or that add an (at least, partly) enabling, and therefore intra-solution, physical transformation or machine tie, should be held patent eligible.

IV) THE COURT SHOULD NOT *A PRIORI* ELEVATE SOME FIELDS OF RESEARCH AND INQUIRY AS MORE DESERVING OF PATENT PROTECTION THAN OTHERS

There is no good policy reason to determine patent eligibility not based on the usefulness, novelty, non-obviousness, and proper disclosure of the invention, but rather based on the type of thinking to which it can be attributed. No reliable evidence indicates that business method patents are inherently broader, and more preemptive, than other types of inventions. To the contrary, following the arguments of business method patent opponents, business method innovation is nothing new, and has been practiced for many centuries.[25] Therefore, would it not be *more* difficult, and less likely, for a new and non-obvious business method invention to be so useful as to span huge swaths of newly created economic activity? Judging by the technological developments of the past 100 years, machine inventions are more likely to affect a broad and diverse range of economic activity than business methods.

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[25] See for instance, LEO J. RASKIND, *The State Street Bank Decision: The Bad Business of Unlimited Patent Protection for Methods of Doing Business*, 10 Fordham Intel. Prop., Media & Ent. L. J. 61 (1999)

Inventions should be evaluated based on their contribution to society, not based on whether or not the type of thinking to which they can be attributed meets an arbitrary, prejudiced, and pre-judging, standard. To indicate that certain modes of thought are *per se* less contributive violates basic principles of scientific and academic inquiry.

From the beginning, the US patent system has always been based on a democratic and equitable concept: that the doors of the patent system are open to everyone and that patent applications are examined and evaluated based on their content, not based on whether the applicant is a Fortune 100 company. Patent laws do not pre-judge and discriminate against individuals, and similarly, they should not prejudge, nor discriminate against academic disciplines, fields of inquiry, and modes of thought.

The Federal Circuit, itself, although it is, as shown above, by its opinion in the present case, apparently no friend of broad business method patentability, holds in that opinion:

> We (...) reject calls for categorical exclusions beyond those for fundamental principles already identified by the Supreme Court. We rejected just such an exclusion in State Street, noting that the so-called "business method exception" was unlawful and that business method claims (and indeed all process claims) are "subject to the same legal requirements for patentability as applied to any other

> process or method." 149 F.3d at 1375-76.
> We reaffirm this conclusion.

Bilski, 545 F. 3d at 960.

The law was written to distinguish between processes and abstract ideas, not between academic or scientific disciplines.

In fact, inventions increasingly emanate, not from a single discipline, but from the synthesis of different, and heretofore disparate, fields of inquiry.[26] Leading technology research laboratories have rushed to retain social scientists;[27] and universities, like Stanford University, have established new multi-disciplinary departments and initiatives for the express purpose of combining different areas of research in the search for new solutions.[28] The perhaps best-known recent invention, Google's approach to the building of a better search engine (US Patent No. 6,285,999, *Method for Node Ranking in a Linked Database*) has been the result of its founders' exposure to, and innovative combination of, social science and engineering.[29] The Court should embrace, not step away from, these new currents of progress and innovation.

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[26] *See* JERALD HAGE and MARIUS T. H. MEEUS, *Innovation, Science, And Institutional Change,* Oxford University Press, 2006.

[27] See, for instance, KATE GREENE, *Yahoo Ramps Up Research,* MIT Technology Review, August 04, 2006, available at www.technologyreview.com.

[28] See, for instance, the website for Stanford's Bio-X department, http://biox.stanford.edu.

[29] The impetus for the Google search engine came from the insight that the methods of citation and annotation that are

CONCLUSION

In sum, applying the machine and transformation test as a solely determinative, and overly restrictive, requirement for patent eligibility, is contrary to the intent of the 1952 Patent Statute, and this Court's precedent.

Applying the law as written and intended by Congress will not have adverse societal consequences, because the empirical evidence shows that business method process patents are not, inherently, less beneficial to society than other patents.

Respectfully Submitted,

MARK LANDESMANN
564 Santa Rita Avenue
Palo Alto, CA 94301
(650) 798-5443

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used in academic publishing could be applied to organize the information on the World Wide Web. See John Battelle, The Search, Penguin Books, 2005, pages 71-72, and the text of the patent.

AMICUS
CURIAE
BRIEF

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IN THE

Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF
COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING
DIRECTOR OF THE UNITED STATES PATENT AND
TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari to the
United States Court of Appeals
for the Federal Circuit

BRIEF OF *AMICUS CURIAE* LEGAL ONRAMP IN SUPPORT OF NEITHER PARTY

ORLANDO LOPEZ, J.D., PH.D.
BURNS & LEVINSON LLP
125 Summer Street
Boston, MA 02110
(617) 345-3243

PATRICK C. WOOLLEY
POLSINELLI SHUGHART PC
700 W. 47th Street, Suite 100
Kansas City, MO 64112
(816) 360-4280

CATRIONA M. COLLINS
Counsel of Record
100 Park Avenue
Suite 1600
New York, NY 10017
(646) 321-8443

Of Counsel
BRYAN D. BEEL, J.D., PH.D.
KOLISCH HARTWELL, P.C.
200 Pacific Building
520 S.W. Yamhill Street
Portland, OR 97204
(503) 224-6655

DAVID C. BOHRER
CONFLUENCE LAW PARTNERS
60 South Market Street,
14th Floor
San Jose, CA 95113
(408) 938-3882

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005 4XIV5J

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INTEREST OF *AMICUS CURIAE*

Legal OnRamp (LOR) is a law-centered social networking website.[1] LOR was founded in 2007 by the law firm Orrick, Herrington & Sutcliffe, Mark Chandler, General Counsel of Cisco Systems, and attorney Paul Lippe, currently Legal OnRamp's CEO. LOR's goal is to enable attorneys to connect and share legal knowledge on a virtual, worldwide basis, whether they are in-house counsel or private practitioners. LOR's membership includes more than 9,300 individual attorneys, more than 4,300 of whom practice as in-house attorneys for businesses. The members represent all types of legal practice, from the largest companies, including several leading U.S. banks and major corporations, to the smallest law firms.

LOR's primary function is to keep its private practice and in-house users connected daily so that the two groups can share legal information of interest to both. As such, LOR uses many features common to other social networking sites, including message boards, "walls" for posting messages, closed group functions, and open forums for discussion and document sharing. The site also includes a marketplace where in-house counsel can receive project-specific bids for legal work from firms.

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[1] Pursuant to Supreme Court Rule 37.6, *amicus* Legal OnRamp affirms that no counsel for a party authored this brief in whole or in part, no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief, and no person other than *amicus*, its members, or its counsel made a monetary contribution to the preparation or submission of this brief. Letters reflecting counsel for the petitioner's and counsel for the respondent's blanket consent to the filing of *amicus* briefs have been filed with the Clerk's office.

Some of the most active areas of LOR are its forums and groups. There, members may participate by asking and answering questions, offering advice to others, and discussing topics of interest to them. Because of the high level of engagement in the LOR community, there are often high quality practical and theoretical legal discussions occurring in its forums. Many of these discussions involve topics important to the business interests of LOR's corporate members.

The patentability of business methods is a significant issue for LOR's corporate members. Many of these members practice in the fields of software, financial services, telecommunications, information technology, and more. In each field, the participating corporate members have concerns regarding the appropriate coverage of patent claims and the breadth of patentable subject matter. Many of LOR's members would be profoundly affected by a ruling affirming the reasoning of the Court of Appeals for the Federal Circuit, or by a ruling in favor of the patentability of claims to purely abstract business methods. Accordingly, LOR seeks affirmation of the judgment below, but on different grounds. LOR's members have an interest in this case because appropriate guidance from the Court will provide them with increased certainty regarding the patentability of their future innovations and the conduct of their businesses.

STATEMENT OF CASE

The United States Patent and Trademark Office rejected the claims of Petitioners' U.S. Patent Application Serial No. 08/833,892 as not directed to patent-eligible subject matter under 35 U.S.C. § 101. The Board of Patent Appeals and Interferences sustained the rejection.[2] On appeal to the Court of Appeals for the Federal Circuit Petitioners argued that the examiner erroneously rejected the claims and that the Board erred in upholding that rejection. The Federal Circuit sitting *en banc* affirmed the decision of the Board, concluding that Petitioners' claims are not directed to patent-eligible subject matter, and in doing so, sought to clarify the standards applicable in determining whether a claimed method constitutes a statutory "process" under § 101.

Claim 1 of Petitioners' patent application, which is considered to be representative of Petitioners' patent claims for the purpose of the issues addressed in this brief, reads as follows:

> A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:
>
> > (a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer;
> >
> > (b) identifying market participants for said commodity having a counter-risk position to said consumers; and
> >
> > (c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions

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[2] *Ex parte Bilski*, No. 2002-2257, 2006 Pat. App. LEXIS 51, 2006 WL 5738364 (B.P.A.I. Sept. 26, 2006).

> balances the risk position of said series of consumer transactions.

For the purposes of this brief, Petitioners' claim 1 is also considered to be representative of a "pure business method" patent claim. As used herein the term "pure business method" means a way of conducting a commercial activity that can be readily implemented without the use of a computer or other machine and does not involve any transformation of anything from one state to another. Further, a "pure business method patent" is directed to an abstract idea with no particular limitation on how to implement the invention.

The Court granted certiorari on the following two questions:

> 1. Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."
>
> 2. Whether the Federal Circuit's "machine-or-transformation" test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273.

SUMMARY OF ARGUMENT

This brief addresses Question 1. While the Federal Circuit correctly held that Petitioners' claim was not patent-eligible subject matter, its rationale was flawed and has unduly limited the scope of legitimate patent-eligible processes under § 101. Pure business methods, including Petitioners' patent claims, are not patent-eligible subject matter under Art I, § 8, Cl. 8 of the Constitution. There is significant evidence that the granting of pure business method patents does not further the constitutionally mandated purpose of patents, namely, to encourage the progress of the useful arts. Unlike traditional patents on technological advances, the patenting of pure business methods is a serious obstacle to innovation because it unduly impedes competition.

The Federal Circuit erred in promulgating the machine-or-transformation test as the exclusive test for determining the patent eligibility of process patent claims. Instead, the Court should reaffirm the flexible two-part inquiry set forth in *Diamond v. Diehr.*[3] Not only does the *Diehr* test avoid the prejudice to legitimate business and innovation inherent in an unduly rigid machine-or-transformation test, but it provides an effective screen against attempts to patent a pure business method, such as the method that Petitioners seek to patent, which impedes competition without promoting technological innovation. Petitioners' patent claim pre-empts an abstract idea, thus failing the first prong of the *Diehr* test. At most, the application of the abstract ideas in Petitioners' patent claim, hedging risk in commodities trading, is an insignificant addition to an abstract idea, which fails the second prong of the *Diehr* test.

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[3] *Diamond v. Diehr*, 450 U.S. 175 (1981).

ARGUMENT

I. PURE BUSINESS METHODS ARE NOT PATENTABLE SUBJECT MATTER

A. The Patenting of Pure Business Methods Does Not Promote "Progress" Within The Meaning Of Art I, § 8, Cl. 8.

The Constitution ultimately governs the issue of patent-eligible subject matter.[4] The power to issue patents, conferred upon the Congress by Art I, § 8, Cl. 8, of the Constitution, is qualified by the stated purpose that the patent should "promote the progress of science and useful arts".[5] The Patent Clause reflects a balance between the need to encourage innovation and the avoidance of monopolies which stifle competition without any concomitant advance in the "Progress of Science and useful Arts."[6] "From their inception, the federal patent laws have embodied a careful balance between the need to promote innovation and the recognition that imitation and refinement through imitation are both necessary to invention itself and the very lifeblood of a competitive economy."[7] Any consideration of the patent-eligibility of pure business methods must, therefore, include an evaluation of whether the granting of patents on pure business methods suppresses competition without attendant progress in the useful arts.

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[4] *See Shultz v. Moore*, 419 U.S. 930, 931 (1974) (Douglas, J., dissenting) ("[T]he standard of patentability is at root a constitutional standard. In determining patent validity under the statute, a court simultaneously holds the statute true to its constitutional source.").

[5] *Great Atlantic & Pacific Tea Co. v. Supermarket Corp.*, 340 U.S. 147, 154 (1950) (Douglas and Black, JJ., concurring).

[6] *Bonito Boats v. Thunder Craft Boats*, 489 U.S. 141, 146 (1989).

[7] *Id.*, at 146-147.

Following the Federal Circuit's repudiation of the so-called "business method exception" in *State Street Bank & Trust Co. v. Signature Fin. Group Inc.*,[8] it became generally accepted that pure business methods were patentable, although the actual invention at issue in *State Street* was not a pure business method, but, rather a data processing system for implementing an investments structure. Significantly, before the Federal Circuit's decision in *State Street* there appears to have been no widespread demand for patent protection for pure business methods.[9] The availability of other forms of legal protection for new ways of conducting commerce, such as trade secret protection and copyright protection in appropriate circumstances, along with the commercial advantage enjoyed by the first to adopt a new way of transacting business seem to have been regarded as adequate incentives to innovate. For example, in *Kewanee v. Bicron*[10] the Court discussed the interplay between patent and trade secret protection and suggested that trade secret protection under state law provides sufficient incentives to innovate in the field of business methods because "keeping such items secret encourages businesses to initiate new and individualized plans of operation, and constructive competition results".[11]

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[8] 149 F.3d 1368 (Fed. Cir. 1998).

[9] Indeed, it appears that it has been over 120 years since this Court was asked to consider whether business methods were patentable, in *Munson v. City of New York*, 124 U.S. 601, 604-05 (1888), and there, the Court opted to decide the case on different grounds and not reach the patent eligibility issue.

[10] 416 U.S. 470 (1974).

After *State Street*, the patenting of pure business methods, as well as the patenting of computer-implemented business methods, became common and began to cause concern, particularly among businesses engaged in commerce over the Internet or in developing computer technology. These concerns were expressed in hearings before the Federal Trade Commission (FTC) and before Congress. In a particularly prescient forewarning of some of the current misgivings regarding the patenting of pure business methods, the Court long ago observed that "an indiscriminate creation of exclusive privileges" tends to obstruct innovation rather than stimulate it and may create "a class of speculative schemers who make it their business to watch the advancing wave of improvement, and gather its foam in the form of patented monopolies, which enable them to lay a heavy tax upon the industry of the country, without contributing anything to the real advancement of the arts."[12]

The FTC considered the relationship between innovation and patents in an October 2003 report entitled "To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy".[13] The report noted that defenders of business method patents urged that "innovation should be presumed unless empirical evidence to the contrary exists," but "critics argued that business method patents do not foster incentives to innovate, because business methods traditionally evolve in response to competition and internal business needs, without regard to legal rights to exclusivity".[14] The FTC made no specific recommendation for judicial or legislative action on business method patents, but counseled that decision-makers should ask whether granting patents on certain subject matter will promote the constitutional objective of progress "or instead will hinder competition that can effectively spur innovation".[15]

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[11] *Id.*, at 483.

[12] *Atlantic Works v. Brady*, 107 U.S. 192, 200 (1883).

[13] The report is *available at* http://www.ftc.gov/os/2003/10/innovationrpt.pdf. To examine the balance of competition and patent law and policy, the FTC and the DOJ held hearings from February through November 2002 involving over 300 panelists including representatives from large and small businesses.

The FTC noted that "empirical study has shown that in some industries, firms often innovate to exploit first-mover advantages, learning-curve advantages, and other advantages, not to gain patent protection".[16] For instance, one early study showed that in only two of the twelve surveyed industries—pharmaceuticals and chemicals—did the firms believe patents to be essential for developing or introducing thirty percent or more of the inventions.[17] The FTC noted that a later study found that lead time, learning curve advantages, complementary sales or service efforts, and secrecy were all more effective means of protecting the competitive advantages of new processes than patents were.[18] This study analyzed survey responses from 650 R&D managers representing 130 lines of business. The most recent study cited by the FTC confirmed the earlier findings; it found that patents trailed secrecy, lead-time, investments in complementary manufacturing capabilities, and investments in complementary sales and services as businesses' preferred methods of protecting commercially valuable innovations.[19] "[P]atents are unambiguously the least central of the major appropriability mechanisms overall," the study concluded.[20]

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[14] *Id.*, Ch. 4, at 43.

[15] *Id.*, Executive Summary, at 15; Ch. 4, at 43.

[16] *Id.*, Ch. 2, at 11.

[17] *See* Edwin Mansfield, *Patents and Innovation: An Empirical Study*, 32 MGMT. SCIENCE 173 (1986).

Most of the testimony regarding business method patents at Congressional hearings has focused on the effectiveness of the examination process for business method patent applications, in particular the difficulties caused by the relative dearth of published prior art for business methods which has permitted the issuance of patents on methods of doing business that some believe to be plainly obvious and lacking in novelty. However, some members of Congress and some business representatives who have testified at these hearings have addressed the more fundamental question of whether the granting of patents on new ways of transacting business promotes progress within the meaning of Art. I, § 8, Cl. 8.

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[18] *See* Richard C. Levin *et al.*, *Appropriating the Returns from Industrial R&D*, *in* BROOKINGS PAPERS ON ECONOMIC ACTIVITY 783 (1987).

[19] *See* W. M. Cohen *et al.*, *Protecting Their Intellectual Assets: Appropriability Conditions And Why U.S. Manufacturing Firms Patent (Or Not)* (National Bureau of Econ. Research Working Paper No. 7552, 2000), *at* http://papersdev.nber.org/papers/w7552.

[20] *Id.*, at 9 (discussing product innovations); Figures 1 and 2 (reporting similar results for product and process innovations).

For example, in a hearing before the Subcommittee on Courts, the Internet and Intellectual Property of the House Committee on the Judiciary on April 4, 2001[21], Representative Berman of California expressed his concern about the "propriety of patenting methods for doing business" and asked whether "an abstract idea for conducting or organizing business operations" should receive patent protection.[22] Andrew B. Steinberg, who was then Executive Vice President and General Counsel of Travelocity.com, a large e-commerce retailer providing on-line travel services, testified that for Travelocity "business method patents have been neither a prerequisite to nor even a catalyst for innovation" and expressed his agreement with the position taken by the United Kingdom Patent Office that new business methods should not be patent-eligible because "the advantages of stealing a march on competitors, albeit temporarily, are incentive enough to seek to develop them".[23]

The disconnect between the constitutionally-mandated purpose of patents—to encourage innovation—and the granting of patents on pure business methods is nowhere more evident than in the case of patents on tax strategies.[24] It seems obvious that the desire to pay as little tax as legally possible is the true incentive for tax advisors to design new strategies to minimize taxes. However, tax advisors now have to conduct patent searches before giving tax advice lest they be found liable for inducing or contributing to patent infringement when they advise their clients on how to use the tax laws to their advantage.

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[21] The hearing transcript is *available at* http://commdocs.house.gov/committees/judiciary/hju72299.000/hju72299_0f.htm

[22] *Id.*, at 13.

[23] *Id.*, at 68, 63.

[24] There have been numerous bills before Congress seeking to prohibit tax patents. *See*, e.g., H.R. 1908, which passed the House of Representative in September 2007, Senate Bill S. 2369 introduced in November 2007, and §303 of the Stop Tax Haven Abuse Act (H.R., S. 506) introduced in March 2009.

Accordingly, there is significant evidence that the granting of pure business method patents is not necessary to foster innovation in methods of transacting business; it is the first-mover advantage and other competitive advantages that provide the real incentive to innovate. Unlike traditional patents on technological advances, the patenting of pure business methods is, rather, a serious obstacle to innovation because it impedes the competition that is the driving force behind business method innovation. The granting of a patent monopoly on commercial ideas cordons off entire areas of commerce, as well as human thought and speech about new ways of conducting commercial transactions, as private property, foreclosing the competition that fosters true patentable innovations. An obvious example is that the granting of a patent purely on an abstract idea to carry out a commercial activity prevents the development of innovative technology to automate that activity.

It will no doubt be argued by some *amici* that a finding that pure business methods constitute patentable subject matter is mandated by the fact that the viability of some businesses is now heavily dependent on the exclusivity and licensing potential provided by a portfolio of pure business method patents. However, this argument ignores the fact that the constitutional basis for patents is the progress of the useful arts, not the protection of intellectual property for its own sake or the protection of businesses or their sources of profit and capital funding.

For the above-mentioned reasons pure business methods are not patent-eligible subject matter under the Constitution.

II. THE MACHINE-OR-TRANSFORMATION TEST IS NOT THE APPROPRIATE LEGAL TEST FOR PATENT-ELIGIBLE PROCESSES UNDER § 101

A. The Machine-or-Transformation Test Introduces Uncertainty and Disrupts The Legitimate Settled Expectations of U.S. Patentees

Under the Federal Circuit's machine-or-transformation test articulated in *In re Bilski*[25], a claimed process may be considered "patent-eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing."[26] We support the result obtained by the application of this test to Petitioner's pure business method patent claim, but in adopting this particular test as the basis for its rejection of Petitioner's claim, the Federal Circuit has unduly limited the scope of legitimate patent-eligible processes under § 101. The test oversteps this Court's precedent, usurps the role of Congress in rewriting the definition of "process" in the Patent Act, provides no practical guidance regarding what constitutes an eligible machine or transformation and unduly disrupts existing well-founded patent property rights.

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[25] *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (*en banc*).

[26] *Id.*, at 954.

This Court has repeatedly recognized that a fundamental principle or abstract idea, by itself, is not eligible for patent protection[27], but has not historically applied a rigid test in making the determination. The machine-or-transformation test eliminates not just pure business methods but also other processes that were previously considered to be patent-eligible under the Patent Act. The legislative intent of the Patent Act has been interpreted by this Court to include a wide scope of patentable inventions. "Congress plainly contemplated that the patent laws would be given wide scope."[28] Section 101 of the Patent Act lists processes, machines, manufactures, and compositions of matter as the four general classes of patent-eligible subject matter.

Section 101 does not distinguish certain types of processes that are patent-eligible from other types of processes that are not patent-eligible. The term "process" as broadly defined by 35 U.S.C. § 100(b), means "process, art, or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material."[29] Discrepancies between the broad scope of processes as defined by the Patent Act and the restrictive machine-or-transformation test are not reconciled by the Federal Circuit's reasoning. The machine-or-transformation test is a partial abrogation or re-writing of what constitutes a "process" under §§ 100 and 101 of the Patent Act. Consequently, the *Bilski* test contravenes the plain language and legislative intent of the Patent Act.

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[27] "[A] principle is not patentable. A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right." *Le Roy v. Tatham*, 55 U.S. 156, 175 (1853).

[28] *Diamond v. Chakrabarty*, 447 U.S. 303, 308-309 (1980).

[29] The plain meaning of § 100(b) indicates, for example, that a new method of use claim for a known composition of matter is eligible for patent protection under the Patent Act – such a method of use would not previously have required either a machine or any transformation.

The Federal Circuit's decision does not provide guidance as to what types of machines or transformations are sufficient to render processes eligible for patent protection. Even though the Federal Circuit concedes that "[the] application of a . . . mathematical formula . . . may well be deserving of patent protection,"[30] it fails to explain what kinds of machines or transformations may be sufficient to render claims patent-eligible. For example, with respect to the patent at issue in *Gottschalk v. Benson*, 409 U.S. 63 (1972), what type of additional machine would qualify the patent claim as patentable subject matter? Would the conversion of numerals into binary code in the *Benson* patent claim qualify as a transformation under the Federal Circuit test? Thus, the machine or transformation test as articulated by the Federal Circuit introduces more questions than answers for patent practitioners and the businesses that they represent.

There are likely thousands of patentees who have invested substantial sums in obtaining and maintaining U.S. patents to processes that are not pure business methods but do not expressly include a machine or transformation, since such language was previously not required during examination of applications for process patents. These patentees may stand to lose their entire patent investment in view of the decision below.[31] While the Federal Circuit "reject[ed] calls for categorical exclusions beyond those for fundamental principles already identified by the Supreme Court"[32], in practice, however, its decision has given birth to an ill-defined exclusion of previously issued process patent claims based on the form, rather than the substance, of the claims. As noted by the Court in *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, "Fundamental alterations in [patent rules] risk destroying the legitimate expectations of inventors in their property."[33]

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[30] *Bilski*, 545 F.3d, at 953.

Even the Federal Circuit recognized the shortcomings of the test, admitting that the machine-or-transformation test may not be the appropriate test for all future technologies. "Nevertheless, we agree that future developments in technology and the sciences may present difficult challenges to the machine-or-transformation test . . . ."[34] The disruption created by the test was further articulated in Judge Newman's dissenting opinion. "The court thus excludes many of the kinds of inventions that apply today's electronic and photonic technologies, as well as other processes that handle data and information in novel ways. Such processes have long been patent eligible, and contribute to the vigor and variety of today's Information Age."[35]

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[31] These patentees may not be able to cure their patents via corrective measures such as patent reissue, as a *Bilski*-eligible "machine" or "transformation" may not be supported by their original patent specifications.

[32] *Bilski*, 545 F.3d, at 960.

[33] *Festo*, 535 U.S. 722, 739 (2002).

[34] *Bilski*, 545 F.3d, at 956.

B. The Appropriate Test For Evaluating Patent Eligibility of a Process Patent Claim Is Whether The Claim Impermissibly Seeks a Patent on a Fundamental Principle Or An Abstract Idea

The Court has long established that despite a broad statutory interpretation, "excluded from such patent protection are laws of nature, natural phenomena, and abstract ideas."[36] In accordance with these exclusions, the Federal Circuit has held that "mental processes," "processes of human thinking," and "systems that depend for their operation on human intelligence alone" are not patent-eligible subject matter."[37]

While noting that laws of nature, natural phenomena, and abstract ideas alone are not afforded patent protection, the Court has held that, "it is now commonplace that an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection."[38] Therefore, the Court has drawn a distinction between patent claims that attempt to monopolize the excluded subject matter and those which only seek to exclude others from using a specific application of a law of nature or an abstract idea.[39] This distinction has been noted by the Court since the mid-nineteenth century.

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[35] *Id.*, at 976 (Newman, J., dissenting).

[36] *See, e.g., Diamond v. Diehr*, 450 U.S. 175, 185 (1981); *Parker v. Flook*, 437 U.S. 584, 589 (1978), *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972), and *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130, (1948).

[37] *In re Comiskey*, 554 F.3d 967, 980 (Fed. Cir. 2009).

[38] *Diehr*, 450 U.S., at 187.

> "A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right. Nor can an exclusive right exist to a new power, should one be discovered in addition to those already known . . . A patent is not good for an effect, or the result of a certain process, as that would prohibit all other persons from making the same thing by any means whatsoever. This, by creating monopolies, would discourage arts and manufactures, against the avowed policy of the patent laws."[40]

In this case the Federal Circuit recognized that, "the true issue before us then is whether Applicants are seeking to claim a fundamental principle (such as an abstract idea) or a mental process" and that "the underlying legal question thus presented is what test or set of criteria governs the determination . . . as to whether a claim to a process is patentable under § 101 or, conversely, is drawn to unpatentable subject matter because it claims only a fundamental principle."[41]

The Federal Circuit correctly identified the issue, but proceeded to create a patent eligibility test that is inconsistent with prior rulings of this Court, as well as prior decisions of Federal Circuit.[42] In so doing, the court noted that "[the preemption] inquiry is hardly straightforward. How does one determine whether a given claim would pre-empt all uses of a fundamental principle?"[43] In arriving at its restrictive machine-or-transformation test, the Federal Circuit failed to properly consider the flexible guidelines—not rigid tests—laid-out in the trilogy of cases *Benson*, *Flook*, and *Diehr*. Thus, the Federal Circuit erroneously turned a series of adaptable guidelines into a strict test.

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[39] *Id.*

[40] *Tatham*, 55 U.S. at 175.

[41] *Bilski*, 545 F.3d, at 952.

[42] "[T]he Freeman-Walter-Abele test is inadequate. Indeed, we have already recognized that a claim failing that test may

In *Diehr* this Court set forth a two-part inquiry to aid in determining whether a patent claim is directed to a practical application of an abstract idea or a monopoly on the idea itself. The first inquiry asks whether the claim preempts all practical uses of the abstract idea. In *Diehr* the Court found that the claimed process of curing synthetic rubber, using as part of the process a mathematical equation, did not "pre-empt the use of that equation" but permissibly foreclosed the use of the equation only in conjunction with all of the other steps in the claimed process.[44]

In *Benson* the Court found the recited mathematical formula had "no substantial practical application except in connection with a digital computer" and as such "the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself."[45] In addition, the

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nonetheless be patent-eligible. *See In re Grams*, 888 F.2d 835, 838-39 (Fed. Cir. 1989). Rather, the machine-or-transformation test is the applicable test for patent-eligible subject matter." *Id.*, at 959.

[43] *Id.*

[44] *Diehr*, at 187.

[45] *Benson*, 409 U.S., at 71-72.

Court held that the formula was "so abstract and sweeping as to cover both known and unknown uses of the BCD [binary coded decimal] to pure binary conversion."[46]

In *Flook* the claim at issue was directed to using a particular mathematical formula to calculate an "alarm limit" (a value that would indicate an abnormal condition during an unspecified chemical reaction).[47] The Court rejected the patent claim because it did not include any limitations specifying "how to select the appropriate margin of safety, the weighting factor, or any of the other variables."[48] The Court found that the claim derived solely from the discovery of a natural phenomenon and "simply provides a new and presumably better method for calculating [an] alarm limit."[49] Therefore, the Court held that the claim could not "support a patent unless there [was] some other inventive concept in its application."[50] In distinguishing *Flook*, the Court in *Diehr* noted:

> "The [*Flook*] application, however, did not purport to explain how these other variables were to be determined, nor did it purport "to contain any disclosure relating to the chemical processes at work, the monitoring of the process variables, nor the means of setting off an alarm or adjusting an alarm system. All that it

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[46] *Id.*, at 68 (citing *O'Reilly v. Morse* 56 U.S. 62, 113 (1852)).

[47] *Flook*, 437 U.S., at 586.

[48] *Id.*

[49] *Id.*, at 594.

[50] *Id.*

> provides is a formula for computing an updated alarm limit."[51]

Even if the patent claim does not preempt the abstract idea at issue, the second *Diehr* inquiry requires an examination of whether the patent claim contains merely an "insignificant addition" to the abstract idea. In *Flook*, the Court noted the Applicant's assertion that he did not seek to "wholly preempt the mathematical formula," since there were uses of his formula outside the petrochemical and oil-refining industries that remained in the public domain.[52] The Applicant also argued that the presence of specific "post-solution" activity (*i.e.*, the adjustment of the alarm limit to the figure computed according to the formula) distinguished the case from *Benson* and therefore rendered the claimed process patentable.[53] The Court disagreed, stating, "The notion that post-solution activity, no matter how conventional or obvious in itself, can transform an unpatentable principle into a patentable process exalts form over substance. A competent draftsman could attach some form of post-solution activity to almost any mathematical formula; the Pythagorean theorem would not have been patentable, or partially patentable, because a patent application contained a final step indicating that the formula, when solved, could be usefully applied to existing surveying techniques."[54]

In *Diehr*, the Court reiterated that insignificant additions to an abstract principle will not render a process patent-eligible stating, "A mathematical formula as such is not accorded the protection of our patent laws, and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment. Similarly, insignificant post-solution activity will not transform an unpatentable principle into a patentable process. [Internal citations omitted]."[55] Although the Federal Circuit found it necessary to adopt a new test to determine whether a patent claim reciting an abstract idea would pre-empt substantially all uses of that idea, it recognized that "field-of-use" limitations and "insignificant post-solution activities" would not render an otherwise ineligible patent claim patentable.[56]

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[51] *Diehr*, 450 U.S., at 186-87.

[52] *Flook*, 437 U.S., at 589-90.

[53] *Id.*

[54] *Id.*, at 590.

The steps of the Petitioners' patent claim are a series of abstract ideas, namely, (a) the idea of initiating a series of transactions between a commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer; (b) the idea of identifying market participants for said commodity having a counter-risk position to said consumers; and (c) the idea of initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions.

Had the Federal Circuit employed the two-part *Diehr* inquiry, it would have reached the same ultimate conclusion, while also staying faithful to the precedents set by this Court. Petitioners' patent claim fails under the first *Diehr* inquiry because it pre-empts an abstract idea, the only practical application of which is the mitigation of risk in commodities trading. Petitioners' claim also fails under the second *Diehr* inquiry because, at most, the application of the idea, mitigating risk in commodities trading, is an insignificant addition. Accordingly, the Petitioner's claim does not constitute patentable subject matter.

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[55] *Diehr*, 450 U.S., at 191-192.

[56] *Bilski*, 545 F.3d, at 957.

C. The "Machine-or-Transformation" Test May Provide A Clue To The Patent Eligibility Of A Process Patent Claim In Some Cases But Is Not The Correct Test For Determining Patentable Subject Matter

The Federal Circuit has made the machine-or-transformation test the definitive test for process claims under § 101:

> "We stated that the Supreme Court's machine-or-transformation test is the definitive test to determine whether a process claim is tailored narrowly enough to encompass only a particular application of a fundamental principle rather than to pre-empt the principle itself."[57]

As support for this holding, the Federal Circuit cites this Court's rationale in *Benson*. "Transformation and reduction of an article 'to a different state or thing' is the **clue** to the patentability of a process claim that does not include particular machines."[58] (Emphasis Added).

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[57] *In re Ferguson*, 558 F.3d 1359, 1363 (Fed. Cir. 2009) (citing *Bilski*).

This **"clue"** is undoubtedly an important tool to help determine if the claim pre-empts the fundamental principle or simply claims a particular application of the principle. But in *Benson* this Court made it clear that the machine-or-transformation test is only a clue, not a definitive test, stating, "We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents."[59] This language is repeated in *Flook*.[60]

The Federal Circuit even acknowledged that the machine or transformation test may be employed only as a clue in the overall pre-emption inquiry. "An argument can be made [that the Supreme] Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a 'different state or thing'".[61] This phrase from *Flook* just points out a logical or coincidental relationship between the machine-or-transformation clue and the overarching *Diehr* inquiries. The machine-or-transformation inquiry may inform the overall analysis, but it was never intended to be dispositive.

The Federal Circuit tried to explain its rationale for making the machine-or-transformation clue into a definitive rule.

> "We believe that the Supreme Court spoke of the machine-or-transformation test as the "clue" to

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[58] *Benson*, 409 U.S., at 70.

[59] *Id*, at 71.

[60] *Flook*, 437 U.S, at 589 n. 9.

[61] *Bilski*, 545 F.3d, at 954 (citing *Flook*, 437 U.S., at 589 n. 9).

> patent-eligibility because the test is the tool used to determine whether a claim is drawn to a statutory "process"—the statute does not itself explicitly mention machine implementation or transformation. We do not consider the word "clue" to indicate that the machine-or-implementation test is optional or merely advisory. Rather, the Court described it as the clue, not merely "a" clue."[62]

This interpretation of *Diehr* is erroneous. While the Court in *Diehr* considered whether the claims at issue were tied to a machine or transformed physical matter, the Court based its ultimate holding on the two-part inquiry.[63] It is the two-part inquiry applied in *Diehr* which is the appropriate test for patent eligibility of process claims. Although the machine-or-transformation test may provide some general guidance for the examination of process claims, it is plainly inappropriate as the solitary legal standard for processes under § 101.[64] "That a process may be patentable, irrespective of the particular form of the instrumentalities used, cannot be disputed . . ."[65]

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[62] *Id.*, at 956, n. 11.

[63] *Diehr*, 450 U.S., at 192-193.

[64] "It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a "different state or thing." We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents. It is said that the decision precludes a patent for any program servicing a computer. We do not so hold." *Benson*, 409 U.S., at 71.

[65] *Diehr*, 450 U.S., at 184 (citing *Cochrane v. Deener*, 94 U.S. 780, 787-788 (1877)).

D. The Machine-or-Transformation Test Conflicts With Patentable Subject Matter Provisions of Foreign Jurisdictions Such As The European Union And May Disrupt Future Attempts At Global Harmonization

In today's global economy, conflicts between the intellectual property systems of different nations can hinder innovation. The Federal Circuit's decision may impede future attempts to harmonize U.S. patent laws with other jurisdictions in the global economy. For example, the European Patent Office (EPO) has developed a test for determining the patent eligibility of software, business methods, and other process-based subject matter.[66] Article 52 of the European Patent Convention states general exclusions of patentable subject matter. The EPO has held, however, that a claim is patent eligible if "a technical effect is achieved by the invention or if technical considerations are required to carry out the invention."[67] The technical character or teaching must inform a skilled person how to solve a particular technical problem as opposed to a purely financial, commercial, or mathematical problem simply using technical means.

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[66] *EPC* Art. 52 reads, "(1) European patents shall be granted for any inventions which are susceptible of industrial application, which are new and which involve an inventive step. (2) The following in particular shall not be regarded as inventions within the meaning of paragraph 1: (a) discoveries, scientific theories and mathematical methods; (b) aesthetic creations; (c) schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers; (d) presentations of information. (3) The provisions of paragraph 2 shall exclude patentability of the subject-matter or activities referred to in that provision only to the extent to which a European patent application or European patent relates to such subject-matter or activities as such. . . ."

[67] *EPO* T 931/95 (OJ 2001, 441).

The EPO "technical character" requirement is analogous to the two-part inquiry provided by this Court in Diehr. In stating that the invention at issue must involve a technical teaching or inform a skilled person how to solve a particular problem, the EPO is requiring a particular application for the invention. By requiring a particular problem to be solved, the EPO is foreclosing attempts to claim the fundamental principle that would preempt the use of the fundamental principle by others. If the EPO standard were applied to Diehr, the technical character in the Diehr invention would be the curing of synthetic rubber. This is the same conclusion reached by the Court under the first inquiry in Diehr. Likewise, the second Diehr inquiry, which considers whether the patent claim merely contains an insignificant addition, is analogous to the EPO prohibition against claiming a solution to a purely theoretical problem using a particular technical means.

In considering the technical effect of a claim, the EPO is not looking at the parts of the claimed matter, but rather looks at the claim as a whole to determine the technical character of the claimed matter. The two-part inquiry, as laid out by this Court in *Diehr*, similarly looks at the claim as a whole to determine if it preempts the use of a fundamental principle or simply claims a particular ("technical") application of the principal. By contrast, the machine-or-transformation test of the Federal Circuit would require the PTO to consider individual elements or limitations of the claims to determine if a machine or transformation is recited.

CONCLUSION

For the reasons stated herein, the Court should find that pure business methods are not patent-eligible subject matter under the Constitution. Further, the Court should overrule the machine-or-transformation test promulgated by the Federal Circuit as the exclusive test for determining the patent eligibility of process claims, and should reaffirm the flexible two-part inquiry set forth in *Diamond v. Diehr*.

Respectfully submitted,

CATRIONA M. COLLINS
Counsel of Record
100 Park Avenue
Suite 1600
New York, NY 10017
(646) 321-8443

Of Counsel

ORLANDO LOPEZ, J.D., PH.D.
BURNS & LEVINSON LLP
125 Summer Street
Boston, MA 02110
(617) 345-3243

PATRICK C. WOOLLEY
POLSINELLI SHUGHART PC
700 W. 47th Street, Suite 100
Kansas City, MO 64112
(816) 360-4280

BRYAN D. BEEL, J.D., PH.D.
KOLISCH HARTWELL, P.C.
200 Pacific Building
520 S.W. Yamhill Street
Portland, OR 97204
(503) 224-6655

DAVID C. BOHRER
CONFLUENCE LAW PARTNERS
60 South Market Street,
14th Floor
San Jose, CA 95113
(408) 938-3882

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IN THE

Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

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BRIEF OF *AMICUS CURIAE* TIMOTHY F. MCDONOUGH, PH.D. IN SUPPORT OF PETITIONERS

WILLIAM LAMOREAUX
Counsel of Record
900 Jackson Street, Suite 180
Dallas, Texas 75202
(214) 747-2012

Attorney for Amicus Curiae
Timothy F. McDonough, Ph.D.

TC+TA
OCS 4VYY3U

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QUESTIONS PRESENTED

1. Whether the Court of Appeals for the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

2. Whether the "machine-or-transformation" test for patent eligibility adopted by the Federal Circuit, effectively foreclosing meaningful patent protection to a business model involving a series of transactions among a commodity provider, consumers, and market participants, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273.

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INTEREST OF *AMICUS CURIAE*[1]

Timothy F. McDonough, Ph.D. is a political economist, inventor and entrepreneur. He is the inventor of "Mechanism and business method for implementing a service contract futures exchange," patent number 7,373,320[2]. He holds a Bachelor of Science in Electrical Engineering from the University of Hawaii at Manoa, a Master of Science in Economic Research from the University of North Texas and a Doctor of Philosophy in Political Economy from the University of Texas at Dallas.

In his 30-year professional career Dr. McDonough has designed components and installations of autopilot and collision avoidance systems for transport category airplanes such as the Boeing 757/767 and Douglas DC-10. He has served as a senior capacity planning analyst on the headquarters staff of American Airlines where he employed the principles of applied microeconomics and operations research to the challenge of efficiently allocating services of one of the largest air carrier networks in the world. As a self-employed business consultant he has assisted major suppliers in the utilities, communications, banking, entertainment, apparel, and food distribution industries to optimize their service offerings, product mix, distribution and pricing.

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[1] Pursuant to Supreme Court Rule 37, no counsel for any party authored this brief in whole or in part, and no person or entity other than *amicus curiae* made a monetary contribution to the preparation or submission of the brief. Counsel of record for all parties were timely notified 10 days prior to filing and have consented to this filing. Letters of consent have been filed with the Clerk of the Court.

[2] Application filed March 30, 2000 and issued May 13, 2008.

Dr. McDonough has no business or personal relationship with the petitioners and does respectfully submit this brief as a true *amicus curiae* in hope that the policy and economic arguments presented herein may encourage this Court to affirm the two questions presented in this case.

SUMMARY OF ARGUMENT

The present *amicus curiae* takes no position on whether the Petitioner's claims are patentable. His concern is that the economic and policy effects of implementation of the decision of the Court of Appeals for the Federal Circuit in this case would a) hamper the formation of capital in the services sector of the economy, b) degrade or eliminate existing property rights that are essential to continued infant industry protection, and c) eliminate incentive to inventors to disclose innovations that would further the public weal.

INTRODUCTION

American innovation is not confined to Industrial Age mousetraps and other cleverly contrived gadgets. The modern economic agent is more likely to encounter innovation today in the services they consume than in the contraptions they use. The present *amicus curiae* suggests that the decision of the Federal Circuit in this case is an attempt to apply an Industrial Age standard to address a perceived Services Age problem, a problem that the present *amicus curiae* suggests does not exist.

ARGUMENT

IMPEDIMENT TO CAPITAL FORMATION IN THE SERVICES SECTOR OF THE ECONOMY

The sector composition of the United States economy has shifted significantly from agriculture and manufacturing to services since the ratification of the Constitution and the enactment of the first patent legislation in 1790. When the first census to include a breakdown of economic activities was conducted in 1820, it was found that private goods-producing industries[3] accounted for 97% of aggregate output.[4] By 1947 the U.S. Department of Commerce reports that private services-producing industries[5] accounted for 48% of output and the share of private goods-producing industries fell to 40% of output.[6] In 2007 private services dominated the economy with

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[3] Private goods-producing industries consists of agriculture, forestry, fishing, and hunting; mining; construction; and manufacturing.

[4] Historical Census Browser. Retrieved June26, 2009, from the University of Virginia, Geospatial and Statistical Data Center: http://fisher.lib.virginia.edu/collections/stats/histcensus/index.html.

[5] Private services industries consists of utilities; wholesale trade; retail trade; transportation and warehousing; information; finance, insurance, real estate, rental, and leasing; professional and business services; educational services, health care, and social assistance; arts, entertainment, recreation, accommodation, and food services; and other services, except government.

[6] U.S. Department of Commerce. Retrieved June 16, 2009, from the Bureau of Economic Analysis:
http://www.bea.gov/industry/gpotables/.

69% of the total with goods production declining to a share of only 31%.[7]

Innovation in the delivery of services is usually manifested in improvements in organization of factors of production to achieve higher efficiencies. The discipline of industrial engineering is a prolific contributor to advancement of service efficiencies but it is not the only contributor. The services themselves are intrinsic innovations that by their presence in the economy division of labor and other input factors of production is enabled and the subsequent economies of comparative advantage accrue to the entire society.

A substantial portion of the 69% share of economic activity represented by the services sector does not result in any physical transformation of any article or state or thing. Some services innovations may only rearrange human labor that may operate in a sedentary physical state with no manipulation of matter yet are easily recognized by a rational person to be a useful, concrete and tangible result. Such innovations surely advance the public weal as much or more so in a services dominated economy than the many cleverly constructed gadgets did in the Industrial Age.

Congressional intent on the patentability of methods is explicitly expressed in 35 U.S.C. § 101 ("Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title.") and in the statutory definition of "process" in 35 U.S.C. § 100 ("The term "process" means process, art or *method*, and includes a new use of a known process, machine, manufacture, composition of matter, or material." Emphasis added.).

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[7] *Ibid.*

If the prime expression of innovation in the services sector is in methods of doing business then it stands to reason that intellectual property rights that are allocated by law to innovators of Industrial Age *things* should also be allocated to innovators of Service Age *methods* with as much vigor and conviction of the society afforded to the latter as to the former. This Court has done exactly that in denying *certiorari* to the petitioners in *State Street Bank* which has affirmed that business methods are patentable subject matter and thus satisfied the longstanding need to interpret the law of patents to be meaningful in the services dominated economy. *State Street Bank & Trust Co. v. Signature Financial Group*, 149 F.3d 1368, 1375 (Fed. Cir. 1998).

The United States is by public choice a free market capitalist economy that relies on government to preserve property rights but it is left to the devices of the market participants to assemble the means of production without government intervention whenever possible. The American economy is not, however, a perfectly competitive landscape. Market failures and distortions do occur and when they do we turn to government to enable allocation of scarce resources in ways that neutralize the distortions.

One way this is done is to grant temporary monopoly to innovators who are thus shielded from the risks of allocation of substantial capital to start-up or breakout enterprise.

Capital formation in any enterprise in any sector of the economy is fraught with risks that would ordinarily not be mitigated sufficiently to allow it to occur at all if not for the presence of mechanisms such as patent rights. In a series of about 60 interviews of people who invest in startup companies—venture capitalists, high net worth individuals and banks, Columbia Law Professor Ronald Mann found that,

> ...for firms that have a credible product idea and the expertise to implement it, venture capitalists plainly accept the idea that their goal is to identify firms that will have sufficient market power to earn extraordinary profits. I[ntellectual] P[roperty] protection is important only indirectly, as a tool that might provide that market power. The key is "sustainable differentiation": something special about the particular firm that will enable it to do something that its competitors will not be able to do for the immediate future. The interviews reflect more picturesque terminology—referring to "secret sauce" or "magic dust." But it is clear that the key to a desirable investment opportunity is in the expectation of market power, and all

> other attributes of the company are indirect predictors of that ultimate goal.

Mann, Ronald J., "Do Patents Facilitate Financing in the Software Industry?", *Texas Law Review*, Vol. 83, p. 976, 2005.

The present *amicus curiae* has personally experienced difficulty in raising capital from private equity and institutional venture capital sources nationwide when no intellectual property could be offered by the *amicus curiae* as a capital contribution. The present case has caused further impediment to capital formation by the *amicus curiae* for a substantial services industry venture even though one of his business method patents is now issued.

Implementation of the decision of the Court of Appeals for the Federal Circuit in this case would permanently hamper the formation of capital in any industry and such impediment would be especially felt in the services sector where an Industrial Age idea of "machine-or-transformation" test is manifestly unsuited to services that now comprise 69% of economic activity in the United States.

DISRUPTION OF EXISTING PROPERTY RIGHTS

It is difficult to count the number of business method patents that have been issued since they can occasionally be classified with many non-method inventions. A popular proxy used for calculating trends in business method applications and issued patents is patent class 705, "Data processing: financial, business practice, management, or cost/price determination"[8]. During the 20-year period July 1, 1989 to June 30, 2009 the United States Patent and Trademark Office (USPTO) issued 18,238 patents in class 705.[9] Class 705 issues rose sharply from 998 in 2005 to 1,453 in 2006 and then increased steadily to 2,673 in 2008.[10]

By definition, all of these patents have been found by the USPTO to satisfy the statutory requirements of patentability prior to the Federal Circuit decision in this case. This standard was affirmed by this Court in *State Street* and *Diamond v. Chakrabarty,* 447 U.S. 303, 308-309 (1980) ("Congress plainly contemplated that the patent laws would be given wide scope," and that "Congress intended statutory subject matter to 'include anything under the sun that is made by man'").

The Federal Circuit decision in this case has already cast a stifling pall over the more than 18 thousand patents in class 705 that are currently in force. It is difficult to recount a situation in the history of patent law in the United States when the rules have changed so drastically so late in the game for so many.

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[8] Reference tools: Retrieved June 30, 2009, from the USPTO website http://www.uspto.gov/web/patents/classification/.

[9] Patent search: Retrieved June 30, 2009, from the USPTO website http://patft.uspto.gov/netahtml/PTO/search-adv.htm

[10] *Ibid.*

LOSS OF INCENTIVE FOR INVENTORS TO PUBLICLY DISCLOSE INNOVATIONS

This Court has consistently recognized the true purpose of the laws of intellectual property. *Kendall v. Winsor*, 62 U.S. 322, 328 (1858) ("[T]he benefit to the public or community at large was another and doubtless the primary object in granting and securing that monopoly."). *Pfaff v. Wells Electronics, Inc.*, 525 U.S. 55, 63 (1998) ("[T]he patent system represents a carefully crafted bargain that encourages both the creation and the public disclosure of new and useful advances in technology, in return for an exclusive monopoly for a limited period of time."). The Federal Circuit decision in this case threatens to severely compromise that bargain and the sector of the economy that now represents more than two thirds of all output is going to suffer the most if allowed to stand.

Innovative methods of providing services cannot be hidden away in the company safe as readily as the secret gadget and a mountain of non-disclosure agreements are no substitute for intellectual property statutes. Without IP protection capital providers will not have incentive to invest, entrepreneurs will not have incentive to engage in the process of building and nurturing new enterprise and innovators will have no incentive to disclose their ideas to the public.

CONCLUSION

The American propensity to innovate is evident in every economic age. From the Age of Agriculture through the Industrial Age and now the Age of Services, the American economy has demonstrated an efficiency that is unmatched by any system on the planet. The allocation of intellectual property rights under the laws of the United States has played a pivotal role in that ascendency.

For the foregoing reasons the present *amicus curiae* therefore urges the Court to affirm the two questions presented in this case.

Respectfully submitted,

WILLIAM LAMOREAUX
Counsel of Record
900 Jackson Street, Suite 180
Dallas, Texas 75202
(214) 747-2012

Attorney for Amicus Curiae
Timothy F. McDonough, Ph.D.

AMICUS
CURIAE
BRIEF

135

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In The Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,

Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR, PATENT AND TRADEMARK OFFICE,

Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF *AMICUS CURIAE* MEDTRONIC, INC. IN SUPPORT OF NEITHER PARTY

Lawrence M. Sung
Counsel of Record
Jeff E. Schwartz
Dewey & LeBoeuf, LLP
1101 New York
Avenue, NW
Washington DC 20005
(202) 346-8000

Michael J. Jaro
Noreen C. Johnson
Girma Wolde-Michael
Medtronic, Inc.
710 Medtronic
Parkway, NE
Minneapolis MN 55432

Attorneys for *Amicus Curiae*

TC+TA
005 4IDIVDY

LEGAL PRINTERS LLC, Washington DC • 202-747-2400 • legalprinters.com

QUESTIONS PRESENTED

1. Whether the Court of Appeals for the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

2. Whether the Federal Circuit's "machine-or-transformation" test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273.

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INTEREST OF THE *AMICUS CURIAE*[1]

With the consent of the parties, this brief is filed by *Amicus Curiae,* Medtronic, Inc., which is a global leader in medical technology innovation. *Amicus Curiae* engages in the research and development, design, and manufacturing of medical products for use in the diagnosis, monitoring, and treatment of various diseases. *Amicus Curiae*'s business operations include the medical technologies of Cardiac Rhythm Disease Management, Spinal and Biologics, CardioVascular, Neuromodulation, Diabetes, Surgical Technologies, and Emergency Response Systems. Medtronic has no financial interest in the outcome of this case. Medtronic seeks an application of the patent laws in a manner that most effectively promotes innovation and most accurately reflects the intent of Congress.

SUMMARY OF THE ARGUMENT

The requirement that a process must be tied to a particular machine or apparatus, or must transform a particular article into a different state or thing to be eligible for patenting under 35 U.S.C. § 101 would adversely affect medical technology innovation. The machine-or-transformation requirement would preclude the patenting of significant advances in medical research and development, diagnosis, prevention, and treatment. Without the full range of incentives of patent exclusivity, medical innovation will suffer the loss of investment and a retreat into secrecy, the very harms the patent laws were enacted to guard against. Moreover, impeding the patenting of medical breakthroughs jeopardizes public health goals, including affordable universal access, by deterring the invention and public disclosure of competitive medical technology. The machine-or-transformation requirement is therefore inappropriate and should be discarded.

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[1] Pursuant to Supreme Court Rule 37, no counsel for any party authored this brief in whole or in part, and no person or entity other than *Amicus Curiae* made a monetary contribution to the preparation or submission of the brief. Counsel of record for all parties were notified prior to filing and have consented to this filing. Letters of consent have been filed with the Clerk of the Court.

ARGUMENT

I. The Experience of *Amicus Curiae* Medtronic, Inc., as a Global Leader in Medical Technology Innovation Suggests that the Court of Appeals' Revision of Section 101 of the Patent Act to Require a Machine or Transformation Will Jeopardize Progress Across Diverse Industries.

Ingenuity has many faces, and innovation takes many shapes. These simple truths, however, were ignored by the Court of Appeals when it decided the case now before this Court by fashioning a broad, limiting test with questionable application across different technologies. Indeed, this Court's review of the Court of Appeals' judgment in *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), involves the significant revision of a patent law standard that has far reaching implications beyond the parties or any one particular industry. While much public attention has focused on the implications for financial services and computer software companies, the consequences, unintended or otherwise, for medical technology and health care have been understated. In this regard, *Amicus Curiae* seeks to better inform the impact of a change in patent eligible subject matter that *Bilski* represents.

The benefits of a robust patent system where Section 101 of Title 35 of the U.S. Code has earned the healthy reputation for inclusion, rather than exclusion, are reflected in the story of *Amicus Curiae*. Founded over a half century ago, *Amicus Curiae* began as a medical equipment repair shop. The company's first product, inspired by a musical metronome, was nothing short of a life changing therapy – a wearable, battery-powered cardiac pacemaker. This innovation was the foundation for dozens more therapies of *Amicus Curiae*, which used its electrical stimulation expertise to improve the lives of millions of people.

Over the years, *Amicus Curiae* adapted additional technologies for the human body, including radio frequency therapies, mechanical devices, drug and biologic delivery devices, and diagnostic tools. Today, the technologies of *Amicus Curiae* are used to treat more than 30 types of chronic diseases affecting many areas of the body. Since its humble beginnings in Minnesota, *Amicus Curiae* has grown into a multinational company that uses technology to transform the way debilitating, chronic diseases are treated.

Amicus Curiae thus implements a diverse group of technologies with a focus on the need to provide precise clinical interventions as well as progressively decentralized health care delivery systems tailored to specific patient needs. Specifically, *Amicus Curiae*'s current and future product platforms integrate a hybrid of technologies, such as electromechanical, electrical, communication systems, biotechnology, drugs, and information systems, with the objective to identify patient risk and deliver appropriate therapy by continuously monitoring physiological parameters of a patient or indices of a disease state.

In this highly integrated medical product environment, physiological data or health information, which generally relate to "natural laws or principles" based on correlations, comparisons, and deductions, are being used to inform and manage therapy delivery and treatment. *Amicus Curiae* invests heavily in the innovative use, integration, and implementation of these physiological data and relies on the patent system to advance innovation and deliver on *Amicus Curiae*'s long-standing mission to alleviate pain, restore health and extend life.

Most importantly, the public has been a direct beneficiary of the medical advances made possible by *Amicus Curiae* and others because a robust patent system has provided the incentive to innovate and invest in medical technology. The lives of countless patients, as well as those of their families and communities, have been touched by medical inventions such as rapid diagnostic tests and minimally invasive surgical procedures.

II. Examples of Significant Medical Advances that a Machine-Or-Transformation Requirement Would Render Patent Ineligible.

In an attempt to better inform this Court's understanding of the various medical technologies that may be affected by upholding the *Bilski* revision to patent eligibility, *Amicus Curiae* respectfully submits a series of examples drawn from composite experiences of *Amicus Curiae* as a global leader in medical technology innovation research and development on human conditions, disease states, and therapies relating to the heart, brain, spine, bladder, stomach, blood vessels, and more. These illustrations, which include Patient Diagnosis, Monitoring and Medical Data Management, and Personalized Medicine, reflect the extraordinary breadth of technology in this industry sector and foreshadow the importance of recognizing the grave potential consequences, unintended or otherwise, of *Bilski* for medical technology and health care.

In particular, the examples highlight the problem of setting a limiting standard for patent eligibility that applies across diverse fields of technology to encourage inventors to elect the rights and obligations of the patent system. The machine-or-transformation requirement presents a poor fit for those fields that depend on the generation of predictive models from a comparison of individual sample information against a database of previously gathered information. Some have disparaged certain methodologies in this regard as the mere correlation of natural phenomena. However, while the bare observation and act of correlation *per se* may not be patent eligible, precisely how a specific correlation is achieved should be.

In the context of medical technology, the proper evaluation and effective treatment of patients depend upon complex correlations assessed over prescribed times. This, in turn, relies upon the generation of predictive models from a comparison of an individual patient's signs and symptoms against a database of studied human wellness parameters, which contain patterns of diagnosis, chosen treatment, and outcome. These efforts are far from trivial.

A. Patient Diagnosis

As applied to medical technology, the *Bilski* machine-or-transformation revision to Section 101 essentially precludes the patenting of patient diagnosis. Under the *Bilski* test, a method of diagnosis unaccompanied by a medical device or treatment step would be patent ineligible. However, the development of a diagnostic test almost always precedes the ability to treat the disease and is often a distinct research enterprise separated by years, if not decades.

Indeed, the Patent Office has begun to require patent applicants for medical diagnostics inventions, who seek to overcome rejections under Section 101 in the wake of *Bilski*, to recite treatment steps. And moreover, the Patent Office has been inconsistent in administering whether the additional recitation of treatment steps will suffice. In any event, this misapprehends the nature of medical diagnostics development, with the effect being an increasing use of Section 101 ineligibility as a dispositive ground for denial of patent grant.

The criticality to the health care system of achieving diagnostic correlation for predictive patient modeling notwithstanding, this type of correlation is what serves as the foundation for further research and development. Without the incentive to find such correlations due to the absence of patent exclusivity, many avenues of medical treatment may remain underdeveloped or altogether unexplored.

The patent claims to diagnostic methodologies, which have been patentable under Section 101 because they yield a useful, concrete, and tangible result, would fail under the *Bilski* machine-or-transformation test. There is no preemption of a fundamental principle when a correlation is of defined scope, typically associated with a particular condition or disease state. For example, imagine a method of determining the risk of Sudden Cardiac Death (SCD) involving the identification of one or more single nucleotide polymorphisms in a patient. This insight could enable a health care provider to take active measures to successfully prevent or treat a life threatening condition before the occurrence of any adverse event.

Consider also the ability to treat children born with a pulmonary artery malfunction using a method of intelligent scheduling of required multiple surgeries as the children grow. This protocol would ensure that the necessary sizes and types of implantable medical devices are provided at the exact times needed to minimize the number of dangerous, painful, and sometimes disfiguring procedures.

But patent claims to such innovations may be susceptible to *Bilski* patent ineligibility although they do not preempt a fundamental principle or equate with an insignificant extra-solution activity. To the contrary, these inventions improve the quality of health care delivered and patient outcomes through earlier diagnosis, less invasive treatment options, and reductions in hospital stays and rehabilitation times. These important medical innovations would be undermined if this Court were to uphold the *Bilski* machine-or-transformation test.

B. Monitoring and Medical Data Management

The dependable and accurate relay of patient data is an essential component of life saving treatment. There are numerous applications for patient data management that span the spectrum of chronic to acute care. In one instance, a methodology has been developed to communicate information of the physiological state of a patient who has experienced an emergency medical event to a patient treatment center to enable the receiving facility to prepare for the patient's arrival. One application of this methodology could be routing event data from a field device, such as an external defibrillator, to a computer server for information distribution throughout various hospital displays.

Another patient data management system transfers cardiac information to assist doctors in making a decision on whether to bring the patient to a clinic or otherwise monitor long term trends, therapy, and cardiac events. Specifically, the system is a patient management tool that builds upon ideas relating to continuous monitoring of physiological variances or indicators, which are used to monitor a cardiac patient remotely and tailor therapy and health care as appropriate. Thus, the system is dependent upon correlations, extrapolations, and deductions based on the detection or monitoring of natural phenomena. In most of these types of patient management systems, the process of diagnosis, monitoring, or even therapy delivery may not be tied to a machine or apparatus or transform a particular article into a different state or matter. Generally, the major aspect of the operation may be comparative, correlative, iterative, and deductive, rather than transformative.

Although certain embodiments of this technology can be captured through patent claims that include specific device elements (and thus pass muster under the *Bilski* machine-or-transformation test), if patent protection to the methodology itself were unavailable, the initial concept may not have resulted in further development to achieve actual application. The business of innovation often depends on the initial formulation of a system that only later finds integration with real world devices. To deny patent eligibility for such methodologies would impede this innovation.

C. Personalized Medicine

The field of personalized medicine and pharmacogenomics is rapidly gaining traction in the medical technology space. The ability to correlate a patient's genomic profile and gene expression with drug adverse event data can enable health care providers to maximize the probability of a desired treatment outcome and minimize the risk of harmful side effects. The recognition and understanding of the relationships between certain genetic mutations and the occurrence of common diseases to develop treatments tailored to an individual patient is the exciting potential this medical technology presents. However, the labor and cost intensity of these correlations are discouraging without the incentive of patent exclusivity.

As an example, the identification of genetic markers arguably would suffer inactivity or delay due to concerns over collaboration, material transfer, and licensing, in the absence of the defined intellectual property rights that patents provide. The *Bilski* machine-or-transformation test, if upheld as the sole test for patent eligibility under Section 101 as espoused by the Court of Appeals, would not easily resolve questions about personalized medicine inventions where a machine element or transformation event seems inapposite. Like the jurisprudence relating to the patent law doctrine of equivalents, where this Court recognized that the function-way-result test might be inapplicable to certain technologies, the *Bilski* standard is similarly unaccommodating to certain technologies that exist today as well as those yet to come.

III. Section 101 Should Be Inclusive, Rather Than Exclusive.

Section 101 is the principal invitation of the patent laws to would-be innovators everywhere to bring forward the products of their inventive efforts. Using Section 101 in a gate keeping role projects a disenfranchising image of a system established, in the words of President Abraham Lincoln, to add "the fuel of interest to the fire of genius." Without the continued openness of Section 101, this essential combustion that drives the engine of innovation may become a thing of the past. With public health priorities already taking center stage, we cannot afford to deny the promise of medical advances that have yet to be seen by restricting patent eligible subject matter under a machine-or-transformation test.

Unlike the other conditions for patentability set forth under the patent statutes, namely novelty and nonobviousness, Section 101 of Title 35 governs patent eligible subject matter and utility, both of which do not require a comparative assessment of the claimed invention against the prior art. Without such a measure, Section 101 is ill suited to execute a gate keeper function because it is relatively insensitive to the pace of innovation in a specific art. Rather, Section 101 looks more holistically to progress in the useful arts and best fulfills a role as a static prescription, which embraces existing technology, and more importantly, encourages the ingenuity of technology yet to come. Accordingly, attempting to refine Section 101 to strike a normative balance today merely defers the debate until a new technology of concern arrives. But the true detriment of revising the patent eligibility standard now would be the incalculable lost opportunity from potential innovators discouraged from invention and public disclosure.

Advances in medical technology would not be immune from the effect of the machine-or-transformation requirement set forth in *Bilski*. Medical technology encompasses numerous products and processes, including medical devices and supporting software. Indeed, there are many aspects of medical technology that would pass muster nonetheless under the *Bilski* revision to patent eligibility, but significant other aspects remain that would be impeded. And even in those instances where a device component or transformation step may be incorporated into a patent claim, the patentee may still suffer a reduced scope of rights due to a greater likelihood of competitive design around.

Medical technology can also involve the evaluation, diagnosis, and treatment of patients. By way of example, a method of patient assessment can relate to predictive modeling by comparing the patient's signs and symptoms to a database of other patient information to obtain the likelihood of a particular condition and/or likely success of certain therapy if applied to that patient. This medical treatment, whether or not implemented through a general purpose computer, yields a "useful, concrete and tangible result." *See State St. Bank & Trust Co. v. Signature Fin. Group*, 149 F.3d 1368, 1373 (Fed. Cir. 1998) (citing *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994) (en banc)).

To be certain, such methodologies do not constitute "laws of nature, natural phenomena, [or] abstract ideas," *see Diamond v. Diehr*, 450 U.S. 175, 185 (1981) (citing *Parker v. Flook*, 437 U.S. 584, 589 (1978), and *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)), and thus, in the Court of Appeals' parlance in *Bilski*, are not fundamental principles. Nor are they prohibited mental steps. *See Benson*, 409 U.S. at 67; *In re Comiskey*, 499 F.3d 1365, 1377 (Fed. Cir. 2007) (holding that "mental processes," "processes of human thinking," and "systems that depend for their operation on human intelligence alone" are not patent-eligible subject matter under *Benson*). However, under the machine-or-transformation requirement of *Bilski*, it is unclear whether the

Patent Office and the federal courts would deny patent protection on the grounds of ineligibility under 35 U.S.C. § 101. The experiences of *Amicus Curiae* in patent application examinations since *Bilski* suggest the Patent Office has increasingly relied on this ground of rejection.

IV. Section 101 Should Invite the Patenting of All Inventions that Result from Human Ingenuity and Manipulation.

As related to medical technology, the confusion *Bilski* creates has resurrected the concern contemplated by this Court briefly in *Lab. Corp. v. Metabolite*, 548 U.S. 124 (2006) ("*LabCorp*"), and has manifested in cases such as *Classen Immunotherapies, Inc. v. Biogen Idec*, 304 Fed. Appx. 866, 2008 WL 5273107 (Fed. Cir. 2008) (non-precedential), and *Prometheus Labs., Inc. v. Mayo Collaborative Servs.*, No. 2008-1403 (Fed. Cir. 2009) (reviewing Civil No. 04cv1200 JAH (RBB), 2008 WL 878910, 86 U.S.P.Q.2d 1705 (S.D. Cal. Mar. 28, 2008)). Some have criticized patent claims to certain medical diagnosis, for example, on the basis that they seek patent coverage for the mere correlation of natural phenomena. What constitutes mere correlation is then a question open to reasonable dispute.

In *LabCorp*, this Court dismissed the writ of certiorari as improvidently granted. Justice Breyer, joined by Justices Stevens and Souter, dissented from the order. The dissent argued that the Court should have taken the case in order to lend necessary clarity to an important issue in patent law. The patent claims at issue in *LabCorp* recited "correlating an elevated level of total homocysteine in [a sample of] body fluid with a deficiency of cobalamin or folate." In the dissenters' view, a natural correlation between two substances in the body is a "natural phenomenon" that cannot be patented. *LabCorp*, 548 U.S. at 135.

At least one member of the Court of Appeals has recognized the potential havoc that the application of the *Bilski* machine-or-transformation test may create with medical technology innovation. In dissent from the en banc opinion of the Court of Appeals, Judge Rader states:

> Before the invention featured in Lab Corp., medical science lacked an affordable, reliable, and fast means to detect this debilitating condition. Denial of patent protection for this innovation – precisely because of its elegance and simplicity (the chief aims of all good science) – would undermine and discourage future research for diagnostic tools. Put another way, does not Patent Law wish to encourage researchers to find simple blood tests or

> urine tests that predict and diagnose breast cancers or immunodeficiency diseases? In that context, this court might profitably ask whether its decisions incentivize research for cures and other important technical advances. Without such attention, this court inadvertently advises investors that they should divert their unprotectable investments away from discovery of "scientific relationships" within the body that diagnose breast cancer or Lou Gehrig's disease or Parkinson's or whatever.

In re Bilski, 545 F.3d 943, 1014 (Fed. Cir. 2008) (en banc) (Rader, J., dissenting). *Amicus Curiae* concurs with these policy sentiments.

Furthermore, while "[p]henomena of nature, though just discovered, mental processes, and abstract intellectual concepts are . . . the basic tools of scientific and technological work," see *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)), that does not mean all methods, which originate from the invention or discovery of a natural correlation, are similarly patent ineligible. To hold otherwise would be a departure from the wisdom of *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980), that "anything under the sun that is made by man" is patent eligible under 35 U.S.C.§ 101, which implicitly recognized that human intervention could take unpatentable subject matter into the realm of patentability. In particular, the mere correlation of natural phenomena mantra belies the reality that much more often than not, the diagnosis of a patient, and the subsequent treatment based on that diagnosis, are not the products of mere observation and simple correlation. In other words, although a correlation step may be at the heart of the claimed medical treatment, most procedures involve not only the sophisticated appreciation that a correlation may exist, but the studied determination to act based on a perceived significance of that correlation. But these complex methods may not necessarily involve a machine or transforming an article into a different state or thing.

In *Classen*, the Court of Appeals affirmed the district court's summary judgment that Dr. Classen's patent claims were invalid under 35 U.S.C. § 101 because the claims were neither tied to a particular machine or apparatus, nor did they transform a particular article into a different state or thing. The patent claim at issue involved a method of determining whether an immunization schedule affected the incidence or severity of a chronic immune-mediated disorder in a treatment group of mammals relative to a control group of mammals. The Court of Appeals offered no additional reasoning, its opinion being a mere 69 words, twenty words shorter than the actual patent claim.

In *Prometheus*, the Court of Appeals is presently reviewing the district court's summary judgment that the claims of U.S. Patent No. 6,355,623 are invalid under 35 U.S.C. § 101. The patent claim at issue involved a method of optimizing therapeutic efficacy for treatment of an immune mediated gastrointestinal disorder by determining the level of 6-thioguanine. The district court analysis fell in lockstep with this Court's *LabCorp* dissent.

In any event, these cases reflect the tip of the iceberg of possible judicial controversy over the patentability of medical technology if the *Bilski* machine-or-transformation standard is upheld. Moreover, in a particularly crowded field of technology, such as medical technology, the uncertainty over entitlement to patent exclusivity can disqualify otherwise innovative methods and their associated products from access to commercial investment, market entry, and/or post-market entry sustainability.

V. A Machine-Or-Transformation Requirement Would Harm the Public by Deterring Prompt and Open Disclosure of Medical Breakthroughs and by Discouraging Investment in Medical Innovation.

The oft cited purpose of the patent laws is to promote the progress of the useful arts through the creation of temporary exclusivity rights as an incentive for the prompt, public disclosure of inventions because the patent exclusivity facilitates innovative efforts and encourages investment in such endeavors. These principles apply with equal if not greater force in the medical technology industry sector, where commercial competition is intense. Beyond the known beneficial effects today of an enfranchising patent eligibility standard under Section 101, perhaps a more essential consideration is the maintenance of a Section 101 test that will continue the promise of patent protection for innovations to come.

The Court of Appeals decision in *Bilski* opens the door to the use of Section 101 as an instrument for determining precisely what innovation will be acceptable. In *Chakrabarty*, this Court took the wise approach of interpreting Section 101 as broadly inclusive in favor of allowing the other statutory conditions for patentability to more finely monitor what inventions may be patented vis-à-vis the prior art. A Section 101 that embraces inclusiveness ensures continuing innovation in new as well as old fields of technology. Tinkering with Section 101 in hopes of crafting a standard generally applicable to past, present, and future technologies, however well intentioned, may bring unforeseeable consequences, including the unfortunate chilling of future innovation.

CONCLUSION

For the foregoing reasons, *Amicus Curiae* respectfully submits that the *Bilski* machine-or-transformation test has far reaching consequences for enterprises outside the financial services and computer software industry sectors that are critical to this country's public health goals and economic well being. Indeed, for companies, like *Amicus Curiae*, focused on medical technology innovation, the prospect of a revised patent eligibility standard that is less inclusive presents the grave concern that the development of critical lifesaving medical technology will be impeded.

Respectfully submitted,

Lawrence M. Sung
Counsel of Record
Jeff E. Schwartz
Dewey & LeBoeuf LLP
1101 New York
Avenue, NW
Washington DC 20005
(202) 346-8000

Michael J. Jaro
Noreen C. Johnson
Girma Wolde-Michael
Medtronic, Inc.
710 Medtronic
Parkway, NE
Minneapolis MN 55432

Counsel for *Amicus Curiae*
Medtronic, Inc.

AMICUS
CURIAE
BRIEF

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In The
Supreme Court of the United States

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BERNARD L. BILSKI and RAND A. WARSAW,

Petitioners,

v.

JOHN DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR, PATENT AND TRADEMARK OFFICE,

Respondent.

◆

On Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

◆

BRIEF OF AMICUS CURIAE RAYMOND C. MEIERS IN SUPPORT OF NEITHER PARTY

◆

GREGG W. EMCH
Counsel of Record
MACMILLAN, SOBANSKI & TODD LLC
One Maritime Plaza, Fifth Floor
720 Water Street
Toledo, Ohio 43604
419-255-5900

Attorneys for Amicus Curiae

COCKLE LAW BRIEF PRINTING CO. (800) 225-6964
OR CALL COLLECT (402) 342-2831

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QUESTIONS PRESENTED

1. Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

2. Whether the Federal Circuit's "machine-or-transformation" test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273.

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STATEMENT OF INTEREST OF AMICUS CURIAE[1]

Raymond C. Meiers is an attorney in private practice who has been interested in the field of patentable subject matter for over ten years. He has not been paid for this brief. It represents his concern for the advancement of patent law. He holds a Bachelor of Science in Mechanical Engineering from the University of Toledo and a Juris Doctor from the University of Cincinnati. He has no business or personal relationship with the Petitioners or the Respondent and does respectfully submit this brief as a true *amicus curiae*.

◆

SUMMARY OF ARGUMENT

Precedent provides a contemporary and robust framework for distinguishing between patentable and the unpatentable subject matter. It is not necessary to turn to narrowly-focused and rigid tests like the machine test or the transformation test. Similarly, it is not necessary to turn to subjective standards like "technology" or "mental processes." Further, § 101 need not be viewed as some quaint but ineffectual provision of Title 35, such that the other provisions of Title 35 are capable of filtering subject matter not worthy of a patent.

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[1] Under Supreme Court Rule 37.6, I state that no part of this brief was authored by counsel for any party, and no person or entity made a monetary contribution to the preparation or submission of the brief. The brief is filed with the consent of the parties, copies of the consent letters having been filed with the Clerk.

The framework provided by precedent, when fully appreciated and properly applied, will function to isolate unpatentable subject matter in conformance with legislative intent. As set forth in greater detail below, precedent reveals that patentable subject matter is defined by a tripartite system. The three elements of the system are manifestations of nature, invention, and useful result. The invention applies manifestations of nature and achieves a useful result. Each element must be present and distinct from the other elements, but the three elements must have a contextual relationship with one another. The Court has provided guidance for assessing each element individually and for verifying the necessary relationship among the elements.

It is submitted that the application of the tripartite system reveals that the claims at issue in the present matter fail to define patentable subject matter. Specifically, the claims are not based on manifestations of nature, demonstrated by the fact that the claims will not produce the only useful result implied by the application. The claims purport to provide a system by which a party practicing the claims will achieve a profit from counterbalancing two series of commercial transactions. Recognizing that patent claims must achieve the useful result that is alleged, the present claims implicitly assert a foolproof method for making a profit in a risk management market. No readily appreciated law of economics indicates that such a method is possible and no such law is set forth in the application. Patents are not granted for claimed subject matter that merely attempts to achieve a useful result.

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ARGUMENT

1. THE FRAMEWORK FOR IDENTIFYING PATENTABLE SUBJECT MATTER

A. The Fundamentals: Manifestations of Nature and Abstract Ideas are not Patentable

It is beyond dispute that manifestations of nature are not patentable. A claim to the exclusive use of a power of nature itself on the ground that the patentee was the first to discover that it could be employed to a useful result cannot be sustained. *Tilghman v. Proctor*, 102 U.S. 707, 726-7 (1880). Similarly, abstract ideas are not patentable. An idea may be a good one, but an idea is not patentable. *Rubber-Tip Pencil Company v. Howard*, 87 U.S. 498, 507 (1874).

Building on these fundamentals, subsequent decisions by the Court provide a robust framework for the analysis of claimed subject matter under § 101. The starting point for revealing this framework is to focus on the fundamentals. Specifically, the definitions of "manifestations of nature" and "abstract ideas" must be examined. In addition, the basis for their exclusion from patentable subject matter must be appreciated. Understanding the meaning and context of these terms under § 101 is critical and should not be assumed. As stated by Justice Frankfurter:

> It only confuses the issue, however, to introduce such terms as "the work of nature" and the "laws of nature." For these are vague and malleable terms infected with too much ambiguity and equivocation. Everything that happens may be deemed "the work of nature," and any patentable composite exemplifies in its properties "the laws of nature." Arguments drawn from such terms for ascertaining patentability could fairly be employed to challenge almost every patent. *Funk Brothers Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 134-5 (1948) (Frankfurter, F. concurring).

A similar concern was expressed in *Le Roy v. Tatham*, 55 U.S. 156 (1852). "The word principle is used by elementary writers on patent subjects, and sometimes in adjudications of courts, with such a want of precision in its application, as to mislead." *Id.* at 174. By reexamining these terms, first applied to claimed subject matter over one hundred and fifty years ago, the nature of patentable subject matter begins to come into focus.

i. Manifestations of Nature

Manifestations of nature are defined by several different categories. A manifestation of nature is found in phenomena of nature, such as the quality of bacteria. *Funk Bros.*, 333 U.S. at 130. Natural phenomena may not be definable by equations or objectively measurable, but can be observed by humans. Manifestations of nature also include "laws" of nature, wherein natural phenomena can be defined by incontrovertible equations. The Arrhenius equation is one example of a law of nature. *Diamond v. Diehr*, 450 U.S. 175, 177 n.2 (1981). Phenomena like the heat of the sun, electricity, and the qualities of metals can also be defined by laws of nature. *Funk Bros.*, 333 U.S. at 130. An algorithm or mathematical formula is like a law of nature. *Parker v. Flook*, 437 U.S. 584, 589 (1978).

Manifestations of nature possess two traits relevant to patentable subject matter. First, they arise without the assistance of humans. Thus, "they cannot be invented at all." *In re Bilski*, 545 F.3d 943, 1013 (Fed. Cir. 2008) (Rader, J., dissenting). They are "free to all men and reserved exclusively to none" and "part of the storehouse of men." *Funk Bros.*, 333 U.S. at 281. For this reason, manifestations of nature themselves cannot be patented. A second trait common to manifestations of nature is that they are dependable. They define reliable building blocks and tools that can be applied in an invention to repeatedly achieve a useful result.

ii. Abstract Ideas

An "idea" is any conception existing in the mind as a result of mental understanding, awareness, or activity. Random House Webster's Unabridged Dictionary 949 (2d ed. 1997). An idea is a thought, conception, notion, groundless supposition, or fantasy. *Id.* The adjective "abstract" connotes thought apart from concrete realities, specific objects, or actual instances. *Id.* at 8. The term abstract also refers to expressing a quality or characteristic apart from any specific object or instance.

An "abstract idea" is theoretical, not applied or practical. In terms of patentable subject matter, an abstract idea is a hoped-for result. An abstract idea is thus the antithesis of a useful result that is required of patentable subject matter. "A principle in the abstract is a fundamental truth or a ***motive*** and cannot be patented." *Le Roy*, 55 U.S. at 175 (emphasis added). An invention[2] converts a hoped-for result into a useful result. Patents are not granted as "a reward for the search, but compensation for its successful conclusion." *Brenner v. Manson*, 383 U.S. 519, 536 (1966). Thus, if the purported result of claimed subject matter is not in fact useful, the claimed subject matter is directed to an abstract idea.

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[2] The term "invention" has a common meaning and a more particular meaning in patent law. Subject matter may be developed or envisioned that is viewed as useful and new. In common usage, such subject matter is referred to as an invention. However, the requirements set forth in Title 35 of the United States Code determine whether such subject matter is truly an invention. As used herein, "invention" strictly refers to subject matter that conforms to § 101 and presumes conformance with the other provisions of Title 35. Subject matter that purports to be an invention but has not been confirmed as thus is referred to as "claimed subject matter."

iii. The cooperative relationship between Manifestations of Nature and Abstract Ideas

Like manifestations of nature, abstract ideas are relevant to patentable subject matter in more than one way. In a negative sense, both manifestations of nature and abstract ideas are categories excluded from patentable subject matter. They thus define boundaries around patentable subject matter. In a positive sense, manifestations of nature and abstract ideas place claimed subject matter in context and confirm its status as an invention. It is this interdependent relationship that is the basis of a framework of analysis for claimed subject matter.

B. The Model of Patentable Subject Matter Revealed by Precedent

Precedent can be harmonized on the principle that patentable subject matter is defined by a tripartite system in which ***manifestations of nature*** are applied by ***human-created invention*** to achieve a ***useful result***:

"He who discovers a hitherto unknown phenomenon of nature has no claim to a monopoly of it which the law recognizes. If there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end." *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972) (quoting *Funk Bros.*, 333 U.S. at 130).

"While a scientific truth, or the mathematical expression of it, is not patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be." *Mackay Radio & Telegraph Co. v. Radio Corp. of America*, 306 U.S. 86, 94 (1939).

"The chemical principle or scientific fact upon which . . . [the invention] is founded is, that the elements of neutral fat require to be severally united with an atomic equivalent of water in order to separate from each other and become free. This chemical was not discovered by Tilghman. He only claims to have invented a particular mode of bringing about the desired chemical union between the fatty elements and water." *Tilghman v. Proctor*, 102 U.S. at 729.

"A patent will be good, though the subject of the patent consists in the discovery of a great, general, and most comprehensive principle in science or law of nature, if that principle is by the specification applied to any special purpose, so as thereby to effectuate a practical result and benefit not previously attained." *Le Roy*, 55 U.S. at 175 (quoting *Househill Company v. Neilson*, Webster's Patent Cases, 683).

The quoted passages demonstrate that an invention does not exist in a vacuum. Its presence is confirmed only by reference to the manifestations of nature that are applied and to the useful results that are achieved. Confirming the existence of each of these three elements and verifying a relationship among them is the basis for a framework of § 101 analysis.

C. The Implicit Application of the Tripartite System in Precedent

i. Useful results must be obtained

In *Brenner*, the patent applicant pursued claims to a process for making steroids. The process is disclosed in U.S. Pat. No. 2,908,693, hereafter the '693 patent.[3] The applicant's claims were found unpatentable by the Court for failing to disclose any utility for the compound produced by the process. *Brenner*, 383 U.S. at 536. The process at issue involved the application of manifestations of nature (the materials that were subject to the process). The claimed process successfully achieved a specific end (a compound). However, the claimed subject matter was not an invention because the specific end was not useful.

Brenner does not stand for the position that an invention achieves a result that is universally useful. A patent on a vehicle brake system would likely not be useful to a maker of packaging but would still be valid. A patented drug is not effective for all patients. However, the requirement of usefulness under § 101 applies to all inventions and, therefore, usefulness must have some global definition across the fields of inventive endeavor. In *Brenner*, the Court rejected the proposition that usefulness under § 101 simply requires that the claim subject not be harmful as suggested by Justice Story. *Brenner*, 383 U.S. at 532-3, n.20.

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[3] The '693 patent issued to Ringold and Rosenkranz. Manson sought an interference with Ringold and Rosenkranz and the claims considered by the Court were the interference claims, identical to the claims in the '693 patent.

It is submitted that usefulness under § 101 requires objective verification. Claimed subject matter should be rejected under § 101 for failing to achieve a useful result that can be objectively verified, rather than applying the cryptic label "abstract idea." For example, the practice of the invention will save labor, effectuate more rapid oil-spill control, reduce cost, increase production, reduce the frequency of failure, increase wealth, improve nutritional value, alleviate symptoms, or affect some other measurable quality. The useful result must be verifiable even to those who choose not to practice the invention.

It is conceded that when claimed subject matter appears vulnerable to invalidity under § 101 that the claimed subject matter may also be vulnerable under § 102, § 103, and § 112 of Title 35. However, that is not a legitimate basis for casting § 101 as a pseudo-requirement of patentability. The result in *Brenner* demonstrates that the other requirements of Title 35, § 102, § 103, and § 112, will not always filter unpatentable subject matter. The claims at issue in

Brenner were identical to the claims of the '693 patent. The issuance of the '693 patent demonstrates that the claims conformed to § 102, § 103, and § 112. However, these same claims did not produce a useful result for the patent applicant in *Brenner*. The *Brenner* case does not make clear why the useful result asserted by the applicants of the '693 patent were not also applicable to the claims at issue.

ii. Manifestations of Nature must be applied

In *Mackay*, the claimed subject matter was directed to a structure for an antenna.[4] A formula recited in the claims at issue defined a mathematical relationship between the angle of the wires of the antenna, their length, and the length of wave propagated. *Mackay*, 306 U.S. at 98. The useful result achieved by the claimed subject matter was "the best directional radio propagation by the V type antenna." *Id.* at 101. The Court found that the formula was "applicable only to antenna wires which are multiples of half wavelengths long." *Id.* at 98.

In background, a prior patent had covered antenna wires which were multiples of half wavelengths long, thus conforming to the formula. The claims at issue in *Mackay* were added to an application pending when the suit between the parties began. *Id.* at 100. These claims were added to that application in order to cover the competitor's products that did not infringe the prior patent. The claims covered antenna wires that were intermediate of multiples of half wavelengths. The formula upon which the claims were based did not apply to these wires. *Id.*

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[4] Claims 15 and 16 of U.S. Pat. No. 1,974,387 were at issue.

The Court found the claims invalid, stating the claimed subject matter was based on "***no scientific law applicable*** to wire lengths which are intermediate of multiples of half wave lengths." *Id.* at 98 (emphasis added). The claims effectively cancelled "from the application the statement of ***the scientific law defining the invention***." *Id.* at 100 (emphasis added). As a result, the "best directional radio propagation" could not be derived from the claimed subject matter. *Id.* at 101.

The result in *Mackay* demonstrates why an invention must be based on manifestations of nature: these building blocks, selected and applied by the invention, will, in fact, produce the useful result that is alleged. Patentable subject matter must "produce precisely the [useful] result" alleged. *O'Reilly v. Morse*, 56 U.S. 62, 119 (1853).

Some argue that claimed subject matter must be directed to "technology." It is submitted that a better inquiry is whether the claim is predicated on manifestations of nature. If the patentability of the claim under § 101 is in question, an applicant can objectively address the issue by verifying the particular manifestations of nature that are applied by the claimed subject matter. Proving whether or not the claim is directed to "technology" is wholly subjective. Also, the definition of "technology" is backward-looking and may fail to encompass emerging fields of inventive endeavor.

iii. A human-caused invention must be defined between the manifestations of nature that are applied and the useful results that are achieved

The holding of *Brenner* supports the position that patentable subject matter involves the achievement of a useful result. If the claimed subject matter does not achieve a useful result, it is directed to an abstract idea. The holding of *Mackay* supports the position that patentable subject matter also involves the application of manifestations of nature. If the claimed subject matter is not based on predictable and reliable manifestations of nature, the result produced by the claimed subject matter cannot be predictably achieved and is therefore not useful.

Brenner and *Mackay* address opposite ends of the tripartite system of patentable subject matter. The invention element of the system lies between. The invention element of the tripartite system can be viewed metaphorically as a ladder. The foot of the ladder rests on the foundation provided by the current progress of science and the useful arts. The ladder extends to what was previously only a desirable outcome or abstract idea. The existence of the ladder converts the abstract idea into a useful result. The rungs of the ladder are applied manifestations of nature. One or more humans establish the rails of the ladder which harness and order the manifestations of nature. Invention lies in the selection of manifestations of nature to apply, as well as the order and operating environment in which those manifestations are applied.

The model of an invention as a ladder is consistent with precedent and helpful. The ladder model reflects the concern that an invention is human-caused and not naturally occurring. The ladder model also conveys that the useful result is not readily achievable. Section 101 has been and must continue to be interpreted to require that the ladder to the useful result is more than just one rung.

The *O'Reilly* case represents a relatively straightforward analysis. The eighth claim of Morse's U.S. Pat. No. Re117, hereafter the Re117 patent, read:

> 8. I do not propose to limit myself to the specific machinery, or parts of machinery, described in the foregoing specifications and claims; the essence of my invention being the use of the motive power of the electric or galvanic current, which I call electro-magnetism, however developed, for making or printing intelligible characters, letters, or signs, at any distances, being a new

> application of that power, of which I claim to be the first inventor or discovered.

The useful result of making or printing intelligible characters, letters, or signs, at any distances was achievable by applying the manifestation of nature of electro-magnetism. Other manifestations of nature were also applied; the specification of the Re117 patent describes human-caused steps and structures required to achieve the printing of intelligible characters at a distance. Claims 1-7 of the Re117 patent were focused on the embodiments set forth in the specification and thereby defined an invention between the manifestations of nature applied by Morse and the useful result.[5]

Claim 8 expressly departed from any limitation in the specification. In claim 8, Morse made no pretense of establishing a human-caused invention between the manifestation of nature and the useful result. The claims were found invalid. The Court noted that the written description of the Re117 patent did not support claim 8. *O'Reilly*, 56 U.S. at 119-20. However, the Court also supported the finding of invalidity on the lack of usefulness. The Court stated that "Morse has not discovered . . . that electric or galvanic current will ***always*** print at a distance, no matter what may be the form of the machinery or mechanical contrivances through which it passes." *O'Reilly*, 56 U.S. at 117 (emphasis added).

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[5] Current standards for claim drafting and interpretation are different than the standards applied to the Morse claims. However, a cursory review of claims 1-7 of Re117 make it clear that those claims were intended to include limitations set forth in the specification.

In *The Telephone Cases*, 126 U.S. 1 (1888), the holding of *O'Reilly* was distinguished. Claim 5 of Bell's U.S. Pat. No. 174,465, hereafter the '465 patent, was at issue. The claim read:

> 5. The method of, and apparatus for, transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations, similar in form to the vibrations of the air accompanying the said vocal or other sound, substantially as set forth.

The useful result was transmitting vocal or other sounds telegraphically. The manifestations of nature applied included electrical undulations. The specification of the '465 patent describes human-caused steps and structures required to transmit vocal or other sounds telegraphically by applying electrical undulations. '465 patent *passim*. The difference between Bell's fifth claim and Morse's eighth claim is that Bell's fifth claim expressly limits itself, twice, to the description of the specification.

The results in *O'Reilly* and *The Telephone Cases* are consistent with the tripartite system of patentable subject matter. In *O'Reilly*, Morse sought to characterize the mere association of a manifestation of nature and an achievable useful result as an invention. The printing of characters over a distance could be achieved through, in part, electromagnetism, as shown by claims 1-7 of the Re117 patent. However, Morse's eighth claim was not bound to any human-caused steps or structures. The useful result of printing characters over a distance could not be produced by electromagnetism alone and no human-caused structures or steps, no invention, filled the void. That fact rendered the eighth claim an abstract idea. In *The Telephone Cases*, Bell limited claim 5 by the description of the '465 patent's specification, which set forth human-caused structures and steps that would, in fact, achieve the useful result.

The eighth claim of the Re117 patent appears to be the last patent claim considered by the Court in which a bare correlation between a manifestation of nature and a useful result was claimed. In decisions subsequent to *O'Reilly*, the Court has considered more subtle and nuanced claims. The dominant challenge has been to ensure that claimed subject matter is human-caused and based on manifestations of nature, but does not in fact preempt a manifestation of nature.

iv. Confirming a distinction between the manifestations of nature applied and human-caused structures or steps

As set forth above, *Mackay* supports the position that claimed subject matter must ***apply*** manifestations of nature. Conversely, the holding in *Benson* (409 U.S. 63) confirms that claimed subject matter must not be ***directed merely to*** a manifestation of nature and thus lack human-caused structures or steps. In *Benson*, the claims at issue were directed to a method of converting signals from binary coded decimal form into binary form. *Id.* at 73-4 (appendix). The manifestation of nature applied by the claimed subject matter was a mathematical formula. *Id.* The useful result achieved by the claimed subject matter was a signal in binary form for use in a digital computer. *Id.* at 71-2. The Court determined that, if patented, the claim "would wholly preempt the mathematical formula and in practical effect would be a patent on the algorithm itself." *Id.* The claimed subject matter purporting to be a human-caused invention was merely a single manifestation of nature, an algorithm.

In *Parker*, the claim would not have wholly preempted a mathematical formula but was nonetheless unpatentable. In *Parker*, the requirement that patentable subject matter involve three distinct elements is confirmed. The useful result achieved by the claimed subject matter was an updated alarm limit for transient operating conditions of catalytic conversion processes. *Parker*, 437 U.S. at 585. The claim read:

> 1. A method for updating the value of at least one alarm limit on at least one process variable involved in a process comprising the catalytic chemical conversion of hydrocarbons wherein said alarm limit has a current value of Bo+K wherein Bo is the current alarm base and K is a predetermined alarm offset which comprises:

> (1) Determining the present value of said process variable, said present value being defined as PVL;
>
> (2) Determining a new alarm base, B1, using the following equation: B1=Bo(1.0-F)+PVL(F) where F is a predetermined number greater than zero and less than 1.0;
>
> (3) Determining an updated alarm limit which is defined as B1+K; and thereafter
>
> (4) Adjusting said alarm limit to said updated alarm limit value.

Id. at 596-7 (appendix). Steps 1-3 of the method represent a formula for arriving at the updated alarm limit and is the single manifestation of nature applied. Step 4 is couched in terms of human activity, but is merely a restatement of the useful result. "Updating" and "adjusting" both involve change. As used in the claim, the terms are synonymous. Thus, the claim simply recites the manifestation of nature and the useful result. The claim is thus similar to Morse's eighth claim in Re117. The claim in *Parker* differs from Morse's eighth claim in Re117 in that the useful result can be achieved based strictly on the claimed subject matter. However, the claimed subject matter recited a single manifestation of nature.

In *Benson* and *Parker*, the Court provided a first guideline to confirm that claimed subject does not merely cloak a manifestation of nature: claimed subject matter reciting a single manifestation of nature preempts that manifestation of nature. In *Diamond v. Chakrabarty*, 447 U.S. 303 (1980), the

Court provided a second guideline. The claims at issue were directed to human-made, genetically engineered bacteria. *Id.* at 305. The bacteria achieved the useful result of breaking down crude oil expelled during a spill. *Id.* at n.2. The Court found that the claims were directed to patentable subject matter since they were "not nature's handiwork." *Id.* at 310. This quality of invention was also identified as relevant in *The Telephone Cases*. In finding Bell's patent valid, the Court stated that electricity in its natural state would not achieve the useful result of transmitting sounds. *The Telephone Cases*, 126 U.S. at 532 ("electricity, left to itself, will not do what is wanted"). Claimed subject matter fails to define an invention if the claim recites things already occurring in nature.[6]

The holding in *Funk Bros.* stands in contrast to, but reinforces *Chakrabarty* and *The Telephone Cases* on this point. The claims at issue were directed to a combination of strains of Rhizobium bacteria. *Funk Bros.*, 333 U.S. at 128-30. Generally, the bacteria were applied to infect leguminous plants, such as clover, alfalfa, and soy beans. *Id.* The bacteria allowed the leguminous plants to absorb nitrogen from the air, for subsequent conversion to organic nitrogenous compounds. *Id.* There existed numerous species of

---

[6] See also *Smith v. Snow*, 294 U.S. 1, 22 (1935). "By the use of materials in a particular manner he secured the performance of the function by a means which had never occurred in nature, and had not been anticipated by the prior art; this is a patentable method or process."

Rhizobium bacteria and various strains of each species. *Id.* No one species would infect the roots of all species of leguminous plants and the various species would exert an inhibitory effect on each other when mixed, resulting in reduced efficiency. *Id.* The applicant discovered that some strains could be packaged together without producing the inhibitory effect. *Id.*

The claims recited the combination of two or more strains of bacteria which were "mutually non-inhibitive" and "unaffected by each other's ability to fix nitrogen in the leguminous plant for which they are specific." *Id.* at n.1. The Court acknowledged that the combination yielded advantages, such as allowing farmers to buy one package of bacteria instead of many and simplifying dealer inventory. *Id.* at 131. However, the Court determined that these advantages arose from a primary or underlying useful result, that the strains of bacteria would not inhibit one another. "All that remains, therefore, are advantages of the mixed inoculants themselves. They are not enough." *Id.* at 132. The Court explained:

> Each species has the same effect it always had. The bacteria perform in their natural way. Their use in combination does not improve in any way their natural functioning. They serve the ends nature originally provided and act quite independently of any effort of the patentee. *Id.* at 131.

Thus, the holding in *Funk Bros.* confirms that claimed subject matter fails to define an invention if the useful result is the direct consequence of unaltered manifestations of nature. Merely combining two manifestations of nature (different strains of bacteria) did not make the claims directed to the necessary effect of the combination patentable.

v. Summary

In *Brenner*, claims based on manifestations of nature and reciting steps that produced something not naturally occurring were found invalid because a useful result was lacking. In *Mackay*, claims that could be applied to produce something (1) not naturally occurring and (2) objectively useable were found invalid because manifestations of nature did not support the claims. *O'Reilly* stands for the now unremarkable position that something human-caused must be set forth between the manifestations of nature applied and the useful result achieved. These cases demonstrate that each element of the tripartite system must be present for patentable subject matter. *The Telephone Cases*, *Benson*, *Parker*, *Chakrabarty*, and *Funk Bros.* flesh out a necessary aspect of the relationship among the three elements: the claimed subject matter, manifestations of nature applied, and useful results achieved must be distinct from one another.

D. Benefits of the Tripartite System and Perspective

i. The model of patentable subject matter as a tripartite system divides the analysis into components that are individually easier to assess

The machine-or-transformation test represents a good-faith, but misguided attempt to turn the inquiry under § 101 into two, alternative questions. As amply demonstrated by precedent, the inquiry is far more complicated. The tripartite system model that is proposed herein apportions this complex issue into several sub-inquiries, while remaining consistent with precedent.

The first step in the analysis is to confirm that the result achieved by the claimed subject matter is in fact useful, pursuant to *Brenner*. The usefulness must be objectively verifiable. This first step presumes that the claimed subject matter will in fact achieve the useful result. However, if, on its face, the useful result cannot be verified the claimed subject matter fails to be patentable. This first step will filter claims purporting results that can be only be measured in the mind.

If a useful result is achieved, the relationship between the useful result and the claimed subject matter is assessed. The useful result must not arise naturally from the claimed subject matter, pursuant to *Funk Bros.*

If the useful result is achieved and does not arise naturally from claimed subject matter, the relationship among the useful result, the claimed subject matter, and the manifestations of nature applied by the claimed subject matter is assessed. The claim must recite something human-caused between the manifestations of nature applied and the useful result achieved, pursuant to *O'Reilly*. The human-caused structure or step must be more than a restatement of the useful result, pursuant to *Parker*.[7] The claim must recite a precursor to the useful result that is necessarily human-caused.

If all three elements of the tripartite system are present, the reliability or efficacy of the applied manifestations of nature is confirmed. The claimed subject matter must be based on dependable manifestations of nature to ensure the useful result is achieved, pursuant to *Mackay*. However, the claimed subject matter must not preempt a manifestation of nature in achieving the useful result, pursuant to Benson.

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[7] The claims at issue in *Laboratory Corp. of America Holdings v. Metabolite Laboratories Inc.*, 548 U.S. 124 (2006) (Stevens, J., dissenting) would be invalid pursuant to *Parker*. Specifically, the human-caused step in the claim, the second step, is merely a restatement of the useful result.

ii. The model of patentable subject matter as a tripartite system is rigorous and flexible

As set forth above, claimed subject matter can fail to be patentable under § 101 on at least six different grounds under the tripartite system. Claimed subject matter can achieve a useful result but still fail to be patentable. Conversely, claimed subject matter can be based on manifestations of nature and achieve a specific end but nonetheless be unpatentable.

On the other hand, the tripartite model is flexible since the nature of the claimed subject matter is irrelevant. The model is based on the Court's analysis of claims directed to products or things (*Mackay*, *Funk Bros.*, *O'Reilly*, *Chakrabarty*) and of claims directed to processes (*Brenner*, *Gottschalk*, *Parker*). The model is focused on the universal characteristics of invention, not on whether claimed subject falls under an arbitrarily defined category such as business methods or technology.

iii. The model of patentable subject matter as a tripartite system will encourage focused claiming and extensive disclosure, especially in emerging fields

A patent applicant having the tripartite system as a guide will carefully define the circumstances that bring about the useful result. Prior to filing a patent application, proposed claims can be tested to confirm all three elements of the system are present and clearly distinct from one another. Further, patent applicants in emerging fields of inventive endeavor will have a powerful incentive to fully explain the usefulness of the claimed subject matter and the reliability of the manifestations of nature being applied.

iv. Perspective

The analysis of claimed subject matter for conformance with § 101 will not always be straightforward. The overall inquiry is about identifying a line existing only in an abstract sense, between the patentable and the unpatentable. The model of patentable subject matter as a tripartite system, as thus far developed by precedent, will not provide a bright line test. However, no test should. The tripartite system represents a flexible set of inquiries that, collectively, will identify patentable subject matter in a manner consistent with precedent.

2. APPLICATION OF THE TRIPARTITE MODEL OF PATENTABLE SUBJECT MATTER TO THE PRESENT CLAIMS

A. The claimed subject matter achieves a useful result that is objectively verifiable

The claimed subject matter defines a system of balancing risk.[8] A first series of transactions are initiated between a commodity provider and consumers of the commodity. The consumers purchase the commodity from the commodity provider at a fixed rate based on historical averages. The fixed rate paid by the consumers corresponds to a "risk position" of the consumers. A second series of transactions are initiated between the commodity provider and market participants at a second fixed rate. The market participants can be a distribution company for the commodity.[9] The second series of market participant transactions balances the risk position of the series of consumer transactions.

---

[8] App. No. 08/833,892, claim 1.

The lower court provided an exemplary application of the claimed system:

> For example, coal power plants (i.e., the "consumers") purchase coal to produce electricity and are averse to the risk of a spike in demand for coal since such a spike would increase the price and their costs. Conversely, coal mining companies (i.e., the "market participants") are averse to the risk of a sudden drop in demand for coal since such a drop would reduce their sales and depress prices. The claimed method envisions an intermediary, the "commodity provider," that sells coal to the power plants at a fixed price, thus isolating the power plants from the possibility of a spike in demand increasing the price of coal above

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[9] *Id.* at p. 5, lines 15-16.

> the fixed price. The same provider buys coal from mining companies at a second fixed price, thereby isolating the mining companies from the possibility that a drop in demand would lower prices below that fixed price. And the provider has thus hedged its risk; if demand and prices skyrocket, it has sold coal at a disadvantageous price but has bought coal at an advantageous price, and vice versa if demand and prices fall. Importantly, however, the claim is not limited to transactions involving actual commodities, and the application discloses that the recited transactions may simply involve options, i.e., rights to purchase or sell the commodity at a particular price within a particular timeframe. In re Bilski, 545 F.3d at 949-950.

The application does not identify a useful result achieved by the claimed subject matter precisely. However, the party practicing the claimed subject matter may achieve a profit defined as the margin between the transactions with consumers and the transactions with market participants.[10] This profit would be a useful result to the practicing party and would be objectively verifiable.

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[10] *Id.* at lines 12-14.

B. The useful result does not arise naturally

The useful result is profit obtained by leveraging the first and second series of commercial transactions relative to one another. These transactions must be managed and executed with skill to achieve a profit. It is therefore submitted that profit does not arise naturally.

C. The claim recites something human-caused that links the manifestations of nature applied and the useful result achieved

The manifestations of nature applied by the claimed subject matter are economic principles. The present claims recite steps that are necessarily applied and therefore caused by humans.

D. A human-caused step recited in the claimed subject matter is more than a restatement of the useful result

At least the first step of initiating transactions is a prerequisite to achieving the useful result of profit. This first step represents more than a restatement of the useful result since the profit is not achieved upon completion of this step.

E. The claimed subject matter is not based on reliable manifestations of nature

The key to making the system achieve the useful result is the determination of the risk position with substantial certainty. If the risk position cannot be determined, the scope of necessary transactions with market participants cannot be determined. Further, the useful result of profit to the practicing party will not be achieved.

The risk position appears to be qualitative. The application does not provide an equation defining the risk position. The Petitioners appear to acknowledge that the risk position can only be estimated.[11]

As noted in *Brenner*, a patent is not awarded for a hunt. *Brenner*, 383 U.S. at 536. To be patentable, the claims at issue must in fact "produce precisely the [useful] result" alleged. *O'Reilly*, 56 U.S. at 119. Therefore, for these claims to be patentable, the claim must recite a method that will in fact balance the risk position and generate profit for the commodity provider. The applicants thus allege to have discovered a business method with guaranteed profitability.

Applicants have pointed to benefits accruing to third parties to avoid this conclusion. Specifically, the application notes that consumers and market participants will enjoy isolation from cost and revenue fluctuations, respectively. However, this attempt to divert attention from the useful result associated with the practicing party should be rejected.

---

[11] Application 08/833,892 at p. 4, lines 18-19.

The benefits accruing to consumers and market participants are necessarily dependent on achieving the useful result of profit to the practicing party. For example, if the practicing party achieves a true balance as recited in the claims, wherein no margin exists between the risk position and the second series of transactions, the practicing party suffers loss since some level of administrative costs will be required to maintain the system. The practicing party suffers a greater loss if the risk position is not determined accurately and a negative margin arises.

Thus, if no profit is generated, the claimed subject matter requires the practicing party to altruistically serve consumers and market participants. If such a willing party exists, there is no need for a patent. If no such party exists, the claimed subject matter fails to achieve a result since no one would practice the invention.

The useful result contemplated by the Petitioners is profit for the practicing party. Profit is an attribute that can be objectively verified. However, claimed subject matter must produce the result it purports to achieve and it is untenable to suggest that any business method can produce profit with the certainty required of patent claims. No readily appreciated economic principle supports the claimed subject matter and no such principle is articulated in the Petitioners' application.

◆

CONCLUSION

The analysis of claimed subject matter for conformance with § 101 should be consistent with the Court's precedent. In addition, labels like "law of nature" or "abstract idea" should be rejected in favor of a precise basis for a conclusion of unpatentability. Precedent has defined a framework that can be applied to assess claimed subject matter without regard to the environment in which it is applied to achieve a useful result. The judgment of the court of appeals should be reversed. The case should be remanded to the U.S. Patent Office to give the Petitioners an opportunity to provide evidence that the useful result of profit for the practicing party will be achieved.

Respectfully submitted,

GREGG W. EMCH
Counsel of Record
MACMILLAN, SOBANSKI & TODD LLC
One Maritime Plaza, Fifth Floor
720 Water Street
Toledo, Ohio 43604
419-255-5900

Attorneys for Amicus Curiae

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CURIAE
BRIEF

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In The
Supreme Court of the United States

◆

BERNARD L. BILSKI AND RAND A. WARSAW,

Petitioners,

v.

DAVID J. KAPPOS, UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR, PATENT AND TRADEMARK OFFICE,

Respondent.

◆

On Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

◆

BRIEF *AMICI CURIAE* OF PROFESSORS PETER S. MENELL AND MICHAEL J. MEURER IN SUPPORT OF RESPONDENT

◆

PETER S. MENELL
Counsel of Record
UC BERKELEY SCHOOL OF LAW
Boalt Hall
Berkeley, CA 94720
(510) 642-5489

MICHAEL J. MEURER
BOSTON UNIVERSITY SCHOOL OF LAW
765 Commonwealth Ave.
Boston, MA 02215

COCKLE LAW BRIEF PRINTING CO. (800) 225-6964
OR CALL COLLECT (402) 342-2831

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INTEREST OF *AMICI CURIAE*[1]

The authors of this brief hold law degrees and doctorate degrees in economics. They are law professors who research and teach about intellectual property law and its economic effects. They file this brief solely as individuals and not on behalf of the institutions with which they are affiliated. Amici represent neither party in this action, and offer the following views on this matter.

◆

SUMMARY OF ARGUMENT

The Intellectual Property Clause of the U.S. Constitution authorizes Congress "[t]o promote the Progress of . . . the useful Arts, by securing for limited Times to . . . Inventors the exclusive Right to their . . . Discoveries." At the time of ratification, "useful Arts" related to trades utilizing what we would today call "technology." Courts and the Patent Office long recognized this limitation, denying patent protection for business methods.

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[1] Pursuant to Sup. Ct. R. 37.6, amici note that no counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than amici curiae made a monetary contribution to its preparation or submission. Petitioners and Respondents have consented to the filing of this brief through blanket consent letters filed with the Clerk's Office.

Beyond this constitutional limitation on the scope of patentable subject matter, Congress has not extended patent protection to business methods. The subject matter provision of the 1952 Patent Act merely codified existing subject matter categories and limitations, including the exclusion of business methods. The First Inventor Defense Act of 1999 did not amend § 101. It merely created a prior user defense. To read that provision to override more than two centuries of jurisprudence as well as § 101 without an express statement to that effect would be unwarranted and unwise.

Warnings that upholding the business method exclusion would hamper innovation have little if any bearing on the interpretation of the Constitution and the Patent Act in this case. Regardless, economic research indicates that restoring the business method exclusion could well promote progress, innovation, and competition.

◆

ARGUMENT

I. The Intellectual Property Clause of the U.S. Constitution Precludes Congress from Authorizing Patent Protection for Business Methods and Other Subject Matters Outside of the "useful Arts"

As a threshold matter, this case implicates the scope of Congress's constitutional power to enact patent protection. This inquiry should be guided by the text of the Intellectual Property Clause and the understanding of that text at the time of ratification. This section demonstrates that the Constitution limits patent monopolies to the "useful Arts," a term originally understood to exclude business methods.

Congress's authority to enact patent protection flows from the power "[t]o promote the Progress of . . . the useful Arts, by securing for limited Times to . . . Inventors the exclusive Right to their . . . Discoveries." *See Graham v. John Deere Co.*, 383 U.S. 1, 5 (1966) (quoting U.S. Const. art. I, § 8, cl. 8);[2] 1 Ernest Bainbridge Lipscomb III, *Walker on Patents* § 2:1, at 70-87 (3d ed. 1984) (discussing scholarship on interpretation of art. I, § 8, cl. 8). The original understanding of the Intellectual Property Clause demonstrates that protection for inventions was limited to the "*useful* Arts," while protection for writings could extend to all general knowledge or "Science." *See* Lipscomb, *supra* § 2:1, at 71-73 (describing Pickney's and Madison's likely roles in drafting the clause); The Federalist No. 43 (James Madison) ("The copyright of authors has been solemnly adjudged, in Great Britain, to be a right of common law. The right to *useful* inventions seems with equal reason to belong to the inventors.") (emphasis added). The First Congress entitled the initial patent act, "An Act to promote the progress of *useful* Arts." Ch. 7, 1 Stat. 109, 110 (1790) (emphasis added). After the initial act, Congress passed fourteen successive patent acts with titles directed to promoting "useful arts," "useful discoveries," or "useful inventions." *See* Lipscomb, *supra* § 2.1, at 83-84. Only the Patent Act of 1837 referred to the promotion of "science," but that reference was corrected in the Patent Act of 1839. *Id.* at 84. Thus, Congress's patent power was originally understood as limited to "useful Arts."

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[2] The omitted terms – "Science", "Authors", and "Writings" – confer power to enact copyright protection. *See* Richard C. De Wolf, *An Outline of Copyright Law* 15 (1925). During colonial times, the word "science" connoted knowledge in any field. Samuel Johnson, *Dictionary of the English Language* (7th ed. 1785).

Because the Intellectual Property Clause constrains Congress's authority to grant intellectual property rights,[3] Congress cannot grant patents extending beyond the "useful arts." *See Graham*, 383 U.S. at 5 (observing that the patent power is a "qualified authority . . . [which] is limited to the promotion of advances in the 'useful arts'"). To determine the contours of this constraint on Congressional patent power, the Court must consider the meaning of the phrase at the time of ratification.

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[3] *See Eldred v. Ashcroft*, 537 U.S. 186 (2003) (viewing the "limited Times" language as a constraint on congressional power, although not violated by the Copyright Term Extension Act); *Trade-Mark Cases*, 100 U.S. 82, 93-94 (1879) (holding that the clause precludes granting exclusive rights absent "invention," "discovery," or "originality").

Although the Framers provided no express definition of the term "useful Arts,"[4] usage at the time indicates that "useful Arts" related to trades utilizing what we would today call "technology." Just days before the Constitutional Convention of 1787, one delegate gave examples of the "useful arts":

> Under all the disadvantages which have attended manufactures and the useful arts, it must afford the most comfortable reflection to every patriotic mind to observe their progress in the United States and particularly in Pennsylvania. . . . Permit me however to mention them under their general heads: meal of all kinds, ships and boats, malt and distilled liquors, potash, gunpowder, cordage, loaf-sugar, pasteboard, cards and paper of every kind, books in various languages, snuff, tobacco, starch, cannon, musquets, anchors, nails, and very many other articles of iron, bricks, tiles, potters ware, millstones, and other stone work, cabinet work, trunks and Windsor chairs, carriages and harness of all kinds. . . .

Tench Coxe, *An Address to an Assembly of the Friends of American Manufactures*, 17-18 (Philadelphia, R. Aitkin & Son 1787). Alexander Hamilton praised the patent system as a way of encouraging "[inventions] which relate to machinery" in the United States. *See* Alexander Hamilton, *The Reports of Alexander Hamilton: Report on Manufactures* (Dec. 5, 1791) 115-16, 175-76 (Jacob E. Cooke ed., Harper & Row 1964); *see also* The Federalist No. 8, at 69 (Alexander Hamilton) (Clinton Rossiter ed., 1961) (distinguishing between "the arts of industry, and the science of finance"). These sources support the textual inference that "useful Arts" concerned craft, trade, industrial, and technological activities.

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[4] *See* Arthur H. Seidel, *The Constitution and a Standard of Patentability*, 48 J. Pat. Off. Soc'y 5, 10 (1966) (observing that "[n]o historical writings or events have been found analyzing the [Intellectual Property Clause])".

Historians and patent scholars concur that the phrase "useful Arts", as used and understood circa 1787, related to *trades* utilizing what we would today call "technology."[5] The phrase "useful Arts" should be understood in contradistinction to the 18th century terms "polite," "liberal," and "fine" arts – which related to aesthetic and philosophical pursuits.[6] Just as Congress could not confer original jurisdiction on the Supreme Court for cases not specifically enumerated in Article III through statute, *Marbury v. Madison*, 5 U.S. 137, 175-76 (1803), here Congress may not authorize patents for "polite" or "liberal" arts.

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[5] *See* Seidel, *supra* note 4, at 10 (suggesting that "useful Arts" in 1787 connoted useful or helpful trades); Robert I. Coulter, *The Field of the Statutory Useful Arts*, 34 J. Pat. Off. Soc'y 487, 496 (1952) (noting that "[i]t seems clear that 'useful arts' (as a unitary technical term) embraced the so-called industrial, mechanical and manual arts of the 18th century"); Karl B. Lutz, *Patents and Science: A Clarification of the Patent Clause of the U.S. Constitution*, 32 J. Pat. Off. Soc'y 83, 86 (1950) (explaining that "'useful arts' meant what we now call 'technology,' or 'applied science'").

[6] *See* W. Kenrick, *An Address to the Artists and Manufacturers of Great Britain* 21-38 (1774) (contrasting "useful arts" with "polite arts"); John R. Thomas, *The Patenting of the Liberal Professions*, 40 B.C. L. Rev. 1139, 1156-57 (1999); Coulter, *supra*, at 494-96.

Furthermore, the model for early U.S. patent law as well as the economic underpinnings of the American Revolution reinforce that the Founders conceived of patent protection as limited to technical advances and not commercial systems. The English Statute of Monopolies of 1623, which provided a model for the U.S. patent system,[7] provided an exception to the general prohibition against monopolies by granting a "privilege for the term of fourteen years or under [for] the sole working or making any manner of new manufactures . . . to the . . . inventor. . . ." Statute of Monopolies, 1623, 21 Jac. 1, c.3 (Eng.). Notably, that Statute eliminated commercial practices from the scope of patentable exclusivity:

> [T]hose who formulated the Constitution were familiar with the long struggle over monopolies so prominent in English history, where exclusive rights to engage even in ordinary business activities were granted so frequently by the Crown for the financial

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[7] *See Pennock v. Dialogue*, 27 U.S. 1, 18 (1829) (observing that "many of the provisions of our patent act are derived from the principles and practice which have prevailed in the construction of that of England").

> benefits accruing to the Crown only. It was desired that in this country any Government grant of a monopoly for even a limited time should be limited to those things which serve in the promotion of science and the useful arts.

In re Yuan, 188 F.2d 377, 380 (CCPA 1951).[8]

The first two centuries of federal patent protection reinforce that "useful Arts" was understood to exclude business methods. The unpatentability of business methods was well-settled within the Patent Office by 1869. *See Ex parte Abraham*, 1869 C.D. 59 ("It is contrary to the spirit of the patent law construed by the Office for years, to grant patents for methods or analogous systems of bookkeeping.").[9] As discussed in Part II, *infra*, courts and commentators generally believed business methods to be outside the scope of patent protection throughout this period.

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[8] *See also Graham*, 383 U.S. at 5 (observing that the "useful arts" limitation on patentability in Article I, Section 8, Clause 8 "was written against the backdrop of the [English] practices – eventually curtailed by the Statute of Monopolies – of the Crown in granting monopolies to court favorites in goods or businesses which had long before been enjoyed by the public").

[9] *Cf.* Malla Pollack, *The Multiple Unconstitutionality of Business Method Patents*, 28 Rutgers Computer & Tech. L.J. 61, 96 (2002) ("The absence of business method patents cannot be explained by an absence of entrepreneurial creativity in Great Britain during the century before the American Revolution. On the contrary, 1720 is widely hailed as the beginning of a new era in English public finance and the beginning of major innovations in business organization." (citing historical sources)).

Applying plain meaning and the interpretive canon of *expressio unius est exclusio alterius* (the express mention of one thing excludes all others), the Constitutional phrase "useful Arts" most plausibly precludes Congress from granting patents to business methods, methods of practicing law, tax avoidance strategies, plot scripts, sports moves, and other non-technological subject matters. Such an interpretation would not exclude patentability of technology to implement business methods or other non-technological arts.

II. Neither the 1952 Patent Act Nor the First Inventor Defense Act of 1999 Extended the Scope of Patent Protection to Business Methods

If the U.S. Constitution empowers Congress to bring non-technological "discoveries" within the scope of patent protection, then this Court must interpret the scope of § 101 of the Patent Act. The historical record, statutory language, and legislative history relating to the 1952 Patent Act demonstrate that it did not encompass business methods.

A. The 1952 Patent Act Perpetuated Traditional Limitations on Patentable Subject Matter, Including the Exclusion of Business Methods

1. Historical Context of the 1952 Patent Act

The legislation that ultimately became the Patent Act of 1952 began as part of a general codification of the laws of the United States. *See* H.R. Rep. No. 82-1923, at 1 (1952) ("For many years there had been considerable agitation for a complete restatement and codification of all the laws of the United States, inasmuch as the only such codification – the Revised Statutes of 1874 – had become generally outmoded on all subjects."). The impetus for the Patent Act of 1952 was to bring together the numerous sections of the patent law – dating to the Revised Statutes of 1874 and subsequent enactments – into Title 35 of the United States Code. *Id.* at 5.

The codification task was assigned to the Committee on the Judiciary, which concurrently oversaw substantive revision of the patent law. *Id.* at 2. The Committee held hearings and called upon P.J. Federico, Examiner-in-Chief of the U.S. Patent Office, as well as other government officers, representatives of patent law associations, and members of the Bar.

The House Report characterized codification as the "principal purpose" of the bill. *Id.* at 5. But the bill also made several substantive changes to the patent law, principally out of concern that Supreme

Court decisions raised the threshold for inventiveness too high and applied the doctrine of patent misuse too liberally. The House Report noted two "major" substantive changes to the substantive patent law: "incorporating a requirement for invention in § 103 and the judicial doctrine of contributory infringement in § 271." *Id.*

2. The Origins and Meaning of Section 101 of the 1952 Patent Act

The nation's first patent law, "An Act to promote the progress of useful arts" (1790), defined the scope of patentable subject matter as "any useful art, manufacture, engine, machine, or device, or any improvement therein not before known or used." Ch. 7, § 1, 1 Stat. 109, 110 (1790). Congress replaced the 1790 Act three years later with another "act to promote the progress of useful arts."

The Patent Act of 1793 defined the scope of patentable subject matter as:

> any new and useful art, machine, manufacture or composition of matter and any new and useful improvement on any art, machine, manufacture or composition of matter.

Act of February 21, 1793, 1 Stat. 318. That language remained until the recodification of patent law in the 1952 Act. Congress preserved the language nearly verbatim. In the 1952 Act, Section 101 provides:

> any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof may obtain a patent therefore, subject to the conditions and requirements of this title.

Act July 19, 1952, c. 950, 66 Stat. 792, codified at 35 U.S.C. § 101. The only differences between the sections are the substitution of the word "process" for "art" and the avoidance of repeating the categories following the improvement clause through the use of the term "thereof." The legislative history makes clear that substituting "process" for "art" was not intended to be substantive in nature but rather to avoid confusion with other uses of the word "art":

> "Art" in this place in the [prior] statute has a different meaning than the words "useful arts" in the Constitution, and a different meaning than the use of the word "art" in other places in the statutes, and it is interpreted by the courts to be practically synonymous with process or method. The word "process" has been used to avoid the necessity of explanation that the word "art" as used in this place means "process or method," and that it does not mean the same thing as the word "art" in other places.

H.R. Rep. No. 82-1923, at 6.

To further clarify this substitution, Congress added the following definition:

> (b) the term "process" means process, art or method, and includes a new use of a known

> process, machine, manufacture, composition of matter, or material.

35 U.S.C. § 100. The legislative history reinforces that Congress did not intend to change the substantive scope of patentable subject matter:

> The definition of "process" has been added in section 100 to make it clear that "process or method" is meant, and also to clarify the present law as to the patentability of certain types of processes or methods as to which some insubstantial doubts have been expressed.

H.R. Rep. No. 82-1923, at 6. The latter clause – "certain types of processes or methods as to which some insubstantial doubts have been expressed" – was intended to clarify that dicta in *In re Thuau*, 135 F.2d 344, 347 (CCPA 1943) and some other decisions should not be read to bar patentability of a new use of a known machine, manufacture, or composition of matter. *See* P.J. Federico, *Commentary on the New Patent Act*, 35 U.S.C.A. (1954), reprinted in 75 J. Pat. & Trademark Off. Soc'y 161 (1993) [hereinafter "Federico Commentary"].

Thus, the language and legislative history show that Congress intended in the 1952 Act to clarify and recodify the existing contours of patentable subject matter. Congress did not intend to effectuate any change in the scope of patentable subject matter (other than the caveat regarding new uses). *See Diamond v. Diehr*, 450 U.S. 175, 184 (1981) ("Analysis of the eligibility of a claim of patent protection for a 'process' did not change with the addition of that term to § 101."). Rather, it perpetuated the existing contours of patentable subject matter as expressed in the statute and recognized in patent jurisprudence. The substitution of "process" for "art" was for linguistic clarity – to avoid confusion with the constitutional phrase "useful Arts" and the concept of "prior art" – and not substantive reasons. This contrasts with the legislative language and intent with regard to §§ 103 and 271, which were substantive in nature. See Federico Commentary, *supra*, ("some modification was intended in the direction of moderating the extreme degrees of strictness exhibited by a number of judicial opinions over the past dozen or more years"). Thus, to interpret the scope of patentable subject matter under the 1952 Act, the Court must delve into the contemporary understanding of the terms in § 101 that would have been available to the members of the legislative body at the time of enactment.

3. As of 1952, Judicial Decisions Considered Business Methods to Be Beyond the Scope of Patentable Subject Matter

The most authoritative sources that Congress would have consulted at the time of enacting the 1952 Patent Act – treatises and judicial decisions – agreed that business methods were outside the scope of patentable subject matter. As of 1952, the most authoritative patent treatise was Anthony William Deller's four volume treatise, entitled *Walker on Patents: Deller Edition*, published in 1937. The Deller edition updated Albert Henry Walker's classic patent treatise, first published in 1883.

Section 18 of the Deller Edition of *Walker on Patents*, entitled "Unpatentable Subjects" states:

> In view of the fact that patents are grants authorized by statute, only those classes of inventions which are specified by the patent statutes [ ] can be given patent protection. The statutes particularly specify "any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvements thereof,". . . . It is erroneous to believe that every new idea or principle in and by itself is patentable. Thus, a so-called law of nature or scientific principle may not be the subject of a patent. *Within the classification of unpatentable subjects also fall*, the function, result or effect of a machine, an abstract idea, mental theories, plans of action, and so-called *"systems" of business*. These subjects will be discussed in more detail in the following sections.

William Anthony Deller, *Walker on Patents: Deller's Edition*, vol. 1, p. 62 (1937) [hereinafter *Deller's 1937 Edition*] (emphasis added). This makes clear several critical features of patentable subject matter in the years leading up to 1952: (1) only inventions falling within the designated categories of "art, machine, manufacture, or composition of matter" could be patented; (2) "not every new idea or principle in and by itself is patentable"; and (3) courts recognized several categories of unpatentable subject matter – laws of nature or scientific principles; function, result or effect of a machine; abstract ideas; mental theories; plans of action; and systems of business.

Section 22 of the treatise, entitled "Systems of Business," states:

> As instances of non-patentability of ideas,[10] mention may be made of the various systems for doing business, each as modes of bookkeeping, and hotel checking systems. It has been held that a "system" or method of transaction business in neither as "art," nor does it come within any other designation of patentable subject-matter, as for example, a system of cash-registering and checking for hotels apart from the physical means of conducting the system. [*Munson v. Mayor, etc., of New York*, 124 U. S. 601, 31 L. Ed. 586 (1888); *United States Credit System Co. v. American Credit System Co.*, 51 Fed. 751, 754, C. C., N. D. Ill. (1892); *United States*

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[10] [Section 22 references the prior section ("Abstract Ideas"), which states "[a]n idea itself, the mere existence of an intellectual notion that a thing could be done, and, if done, might be of practical utility, and mere mental theories or plans of action are not comprehended within the subject matter of patents."]

> *Credit System Co. v. American Credit Indemnity Co.*, 53 Fed. 818; *Hocke v. N. Y. Central & H. R. R. Co.*, 122 Fed. 467, 469, C. C. A. 2 (1903); cert. den. 191 U.S. 569, 48 L. Ed. 306; *Hotel Security Checking Co. v. Lorraine Co.*, 160 Fed. 467, 469, 479, and cases cited, C. C. A. 2 (1908); *Berardini v. Tocci*, 190 Fed. 329, 333 (1911); aff'd 200 Fed. 1021, C. C. A. 2 (1912); *Guthrie v. Curlett*, 10 F.(2d) 725, 726, C. C. A. 2 (1926).] As to whether or not the means of carrying out the system are patentable, there seems to be no objection in principle or authority. [*Rand McNally & Co. v. Exchange Scrip-Book Co.*, 187 Fed. 984, 986, C. C. A. 7 (1911); *Cincinnati Traction Co. v. Pope*, 210 Fed. 443, 446, C. C. A. 6 (1913).]

Deller's 1937 Edition, vol. 1, at 69.

The unpatentability of business methods was also well-settled within the Patent Office and courts as early as 1869. *See Ex parte Abraham*, 1869 C.D. 59. Court decisions from 1893 through the 1952 Act repeatedly declare that methods of doing business were not patentable subject matter. The current author of *Walker on Patents* observes that "[u]ntil recently it had been considered *well established* that [business] methods were non-statutory." *Moy's Walker on Patents* § 5:28 (4th ed. 2008) (emphasis added). Moy further reports that:

> Virtually all the prior reference works that mention business methods note that they were not patentable subject matter. See, e.g.,

> Leon H. Amdur, Patent Law and Practice 24-25 (1935); Anthony William Deller, 1 Walker on Patents 152-53 (1938 ed.); Robert L. Harmon, Patents and the Federal Circuit 41 (3rd ed. 1994). Until only recently the USPTO's own Manual of Patenting Examination Procedure also asserted that business methods were unpatentable.

Moy's Walker on Patents § 5:28 n.2 (4th ed. 2008) (citation omitted).

The long-standing interpretive canon presuming that codification statutes do not alter prior law applies directly here. Because business methods were outside of the scope of patentable subject matter prior to the 1952 Act and Congress intended to perpetuate existing contours of patentable subject matter when it passed the 1952 Act, the inescapable conclusion is that the 1952 Act excluded business methods from the scope of patentable subject matter. This Court stated in *Finley v. United States*, 490 U.S. 545 (1989), *superceded by statute*, Judicial Improvements Act of 1990, Pub. L. No. 101-650, 104 Stat. 5089, that, "[u]nder established canons of statutory construction, 'it will not be inferred that Congress, in revising and consolidating the laws, intended to change their effect unless such intention is *clearly expressed*.'" *Id.* at 554 (quoting *Anderson v. Pacific Coast S.S. Co.*, 225 U.S. 187, 199 (1912) (holding that linguistic changes in the 1948 revision of the Judicial Code did not expand the substantive scope of jurisdiction) (emphasis added)). Congress did not clearly express its intent to change the scope of patentable subject matter – in fact, it clearly expressed the opposite – so this Court should find no change in the scope of patentable subject matter of § 101. *Cf. Astoria Fed. Sav. & Loan Ass'n v. Solimino*, 501 U.S. 104, 108 (1991) ("[W]here a common-law principle is well established . . . the courts may take it as given that Congress has legislated with an expectation that the principle will apply except when a statutory purpose to the contrary is evident.") (citations and internal quotation marks omitted); *Isbrandtsen Co. v. Johnson*, 343 U.S. 779, 783 (1952) ("Statutes which invade the common law . . . are to be read with a presumption favoring the retention of long-established and familiar principles, except when a statutory purpose to the contrary is evident.").

B. The Phrase "Anything Under the Sun Made by Man" from the 1952 Act's Legislative History Does Not Indicate Legislative Intent to Expand the Scope of Patentable Subject Matter

Some of the confusion surrounding the patentability of business methods stems from a snippet ("anything under the sun made by man") from the legislative history of the 1952 Act. That phrase first surfaced in *Application of Bergy*, 596 F.2d 952, 961 (CCPA 1979). It was then picked up in *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) and *Diamond v. Diehr*, 450 U.S. 175, 182 (1981) without its full context or even ellipses. It was then mischaracterized in *State Street Bank & Trust Co. v. Signature Fin. Group*, 149 F.3d 1368 (Fed. Cir. 1998), *cert. denied*, 525 U.S. 1093 (1999), to suggest that Congress intended to cover business method patents in the 1952 Act. Analysis of this snippet in context shows that it does not and cannot mean what the *State Street* court concluded.

The snippet in question arises in the section of the House Report describing "Part II" of Title 35, which "relates to patentability of inventions and the grant of patents." H.R. Rep. No. 82-1923, at 6. This discussion begins with four paragraphs explaining § 101: the first two deal with the subject matter categories; the second two focus on the final clause of § 101.

The first and longest paragraph begins by stating that § 101 "specifies the type of material that can be the subject matter of a patent." This clearly implies that there are types of material that are not within the scope of patentable subject matter. The report then explains that the 1952 Act covers the same subject matter categories as prior law, with the semantic change of "art" to "process." *See id.*

The second paragraph explains that the definition of "process" was added in § 100 "to make it clear that 'process or method' is meant, and also to clarify the present law as to the patentability of certain types of processes or methods as to which some insubstantial doubts have been expressed." *See id.* This clearly refers to the overruling of dicta in

In re Thuau, 135 F.2d 344 (CCPA 1943). *See* Part II(A)(2), *supra*.

The third paragraph states in its entirety:

> Section 101 sets forth the subject matter that can be patented, "subject to the conditions and requirements of this title." The conditions under which a patent may be obtained follow, and section 102 covers the conditions relating to novelty.

H.R. Rep. No. 82-1923, at 6. At this point in the discussion, the report has moved past the subject matter categories of § 101 to the final clause – it is a transition to the additional (non-subject matter) requirements for patentability.

The fourth and final paragraph, which includes the snippet in question, then states in its entirety:

> A person may have "invented" a machine or a manufacture, which may include anything under the sun that is made by man, but it is not necessarily patentable under section 101 unless the conditions of the title are fulfilled.

H.R. Rep. No. 82-1923, at 6. Given the order of paragraphs as well as the transition, this sentence augments and reinforces the preceding paragraph – which is focused on the final clause of § 101: noting that the test of patentability includes novelty and other requirements. Furthermore, the prefatory clause clearly limits the dependent clause ("which may include anything under the sun that is made by man") to the statutory classes of "machine" or "manufacture." These categories plainly fall within the ambit of "useful Arts." Note that the prefatory clause does not include the other statutory categories: "process" and "composition of matter." Nor does this sentence call for maximal subject matter. Rather, it emphasizes the importance of meeting additional requirements for patentability.

Thus, read in context, the "anything under the sun" snippet does not stand for the proposition that Congress intended the broadest possible scope of patentable subject matter. Furthermore, it cannot properly be the basis for finding that Congress intended to override long-standing limitations on the scope of patentable subject matter – such as the exclusion of business method patents – reflected in jurisprudence and practice. *See Finley,* 490 U.S. at 554; *cf. Solimino*, 501 U.S. at 108; *Isbrandtsen*, 343 U.S. at 783.

C. The First Inventor Defense Act of 1999 Did Not Expand the Scope of Patentable Subject Matter

Several briefs contend that the First Inventor Defense Act of 1999, Pub. L. No. 106-113, app. A, 113 Stat. 1501, 552, 555, codified at 35 U.S.C. § 273, indicates congressional intent to afford patent protection for business methods. These arguments overlook the statutory text, legislative history, and circumstances leading to the establishment of the

§ 273 prior user right, which demonstrate that Congress's intent was far less ambitious.

First and foremost, the text of the statute demonstrates that Congress did not expand the scope of patentable subject matter. The 1999 legislation does not amend § 101, which governs the scope of patentable subject matter. Arguments that the 1999 Amendment overturned the established definition of "process," in essence, require that the amendment repealed the limited scope of § 101 of the 1952 Act by implication. Such interpretations violate the "cardinal rule that repeals by implication are not favored." *Morton v. Mancari*, 417 U.S. 535, 549 (1974); *see also Branch v. Smith*, 538 U.S. 254, 273 (2003); *Whitman v. Am. Trucking Ass'ns*, 531 U.S. 457, 468 (2001) (Congress "does not alter the fundamental details of a regulatory scheme in vague terms or ancillary provisions – it does not, one might say, hide elephants in mouseholes."); *Posadas v. National City Bank*, 296 U.S. 497, 503 (1936). If the adoption of § 273 dramatically expanded the scope of § 101, it did so without Congress expressly acknowledging that effect, and thus would require this Court to endorse an implied repeal of the settled interpretation of § 101 of the 1952 Patent Act.

Instead, Congress placed § 273 in Part III of Title 35, which addresses enforcement rights. That choice is significant because when Congress originally compiled and codified patent law in the 1952 Patent Act it established a three-part structure intended to guide future developments: "[t]he organization of the bill and the arrangement of the sections are such that new future amendments can readily find their place in the organization."[11] H.R. Rep. No. 82-1923, at 5 (1952). Congress described the differences between sections in detail to aid this organization: "The second part consists of the sections relating to the conditions under which a patent may be obtained. . . . The third part contains the sections relating to the patents themselves and the protections of rights under patents." *Id.* The placement of the First Inventor Defense Act of 1999 in Part III instead of Part II indicates Congress's intent *not* to change the law governing "the conditions under which a patent may be obtained." *Id.* This Court has warned against adopting statutory interpretations that are inconsistent with the structure of the overall statutory scheme. *See Beck v. PACE Int'l Union*, 551 U.S. 96, 108 (2007). Interpreting § 273 as a revision to "the conditions under which a patent may be obtained," H.R. Rep. No. 82-1923, at 5, directly contradicts Congress's established statutory structure of Title 35.

That § 273 is a stand-alone provision, intended simply to provide a limited defense in the event that business methods were *deemed* patentable, is further demonstrated by the text of § 273. In defining the term "method" for purposes of the prior user defense,

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[11] Title 35 now also includes a Part IV entitled "Patent Cooperation Treaty" relating to the harmonization of U.S. patent law with international treaty obligations. *See* 35 U.S.C. §§ 351-76.

Congress avoided altering the definitions governing patentable subject matter in § 100. *See* 35 U.S.C. § 100(a) (providing definitions of terms "[w]hen used in this title"). Instead, Congress included a definition of "method" in § 273(a), "[f]or purposes of *this* section," which deals only with the limited defense. *Id.* (emphasis added). Had Congress intended to endorse the *State Street* definition of "method," it could easily have applied that definition to the entire title, including § 101.

The legislative history also does not support the contention that Congress intended to amend § 100 or § 101 by the backdoor method of adopting a stand-alone defense in Part III. Any fair reading of the legislative history reveals ambiguity, but nothing amounts to an express endorsement of *State Street.* At best, the legislative history acknowledges that a court interpreted § 101 in a particular way, H.R. Rep. No. 82-1923 at 47 (observing that "[t]he *State Street* court came down on the side of a very broad scope of subject matter that qualifies for protection"), and as a result, enactment of a defense is necessary given that business methods until then were not considered patentable. *Id.* at 46 (observing that *State Street* provided protection "for subject matter that previously had been thought to be unpatentable."). Had Congress understood *State Street* as the correct interpretation of what Congress intended in the 1952 Act, it easily could have said that. The better interpretation of the opaque discussion is that Congress was fixing an urgent problem created by a surprising decision. The speed with which Congress enacted the fix – the final bill and report were completed in fewer than seven months and the bill was enacted in fewer than eleven months from the denial of certiorari to the Act – further supports that Congress addressed a potentially serious problem without taking on the bigger issue. And while Congress could have overruled *State Street*, that would have required much more extensive reports, hearings, and stakeholder involvement. The § 273 defense was a path of low, if not least, resistance.

The circumstances surrounding the enactment of a prior user right shows that Congress sought to avoid adverse consequences of the Federal Circuit's interpretation of patentable subject matter in *State Street*, *supra*, not to expand the scope of patentable subject matter or ratify the *State Street* decision. The *State Street* decision boldly swept away more than a century of jurisprudence holding that business methods were unpatentable and ignored the language and legislative history of the 1952 Act.[12] The decision

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[12] Judge Giles Rich based his broad reading of Section 101 of the 1952 Patent Act in *State Street* on two fundamental misapprehensions: (1) that the use of the word "any" takes precedence over the designation of specific subject matter categories; and (2) that Congress's use of the phrase "anything under the sun that is made by man" in the legislative history could be taken out of its proper context to eviscerate established jurisprudential limitations on patentable subject matter. According to the *State Street* decision, the only limitation on the scope of patentable subject matter is that an invention produce a "useful, concrete, and tangible result." See *State Street*, 149 F.3d

(Continued on following page)

sent ominous shock waves through the business and financial communities. *See, e.g.*, William T. Ellis & Aaron Chatterjee, "State Street" Sets Seismic Precedent, Nat'l L.J., Sept. 21, 1998, at B13; "Boom" in Business Method Patent Filings Has Followed State Street Ruling, PTO Says, Pat. Trademark & Copr. J. (BNA) 115 (Dec. 10, 1998); Josh McHugh, *Barbed Wire on the Internet*, Forbes, May 17, 1999, at 183 (suggesting that e-commerce magnates may "try to turn patents into the barbed wire of the Internet");

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at 1375 (quoting *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994)). Interestingly, Judge Rich took the opposite view three decades earlier, when his recollection of the 1952 Act would undoubtedly have been fresher:

> Section 101, entitled 'Inventions patentable,' enumerated the categories of inventions subject to patenting. Of course, not every kind of an invention can be patented. Invaluable though it may be to individuals, the public, and national defense, the invention of a more effective organization of the materials in, and the techniques of teaching a course in physics, chemistry, or Russian is not patentable because it is outside of the enumerated categories of 'process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.' Also outside that group is one of the greatest inventions of our times, the diaper service.

Giles S. Rich, *The Principles of Patentability*, 28 George Washington Univ. L. Rev. 393, 393-94 (1960). Under the test articulated in the *State Street Bank* decision – does the invention produce a "useful, concrete, and tangible result" – it is difficult to see how the first diaper service would not pass muster. Yet, Judge Rich considered it outside of the scope of § 101 in 1960. Congress made no changes to the scope of patentable subject matter in the intervening years.

Jaret Seidberg, *Ruling Threatens Banks With Patent Lawsuits*, Am. Banker, Sept. 2, 1998, at 3 (asserting that the *State Street* decision "threatens to embroil the financial services industry in hundreds of patent infringement lawsuits," creating possible liability exceeding $2 billion); Robert M. Kunstadt, *Opening Pandora's Box*, IP Mag., Jan. 1999 (warning that "a firestorm of litigation threatens to engulf corporate America" and predicting "large-scale disruption of U.S. commerce, as sharp operators move to patent business methods and assert patents against the unsuspecting").

In this atmosphere of harsh criticism of the *State Street* decision and dire predictions about its impacts on the financial sector, Congress's decision to create a safe harbor is most plausibly interpreted as sidestepping the question of patentable subject matter. Congress sought to insulate businesses that were using methods as trade secrets from the *State Street* decision, leaving the scope of § 101 intact. Furthermore, for opponents of business method patents, enacting a business method patent exclusion into law was not necessary in light of the text of § 101 (which limits subject matter to designated categories), Supreme Court jurisprudence, and the legislative history surrounding the 1952 Act. On the other side, some patent holders and members of the patent bar were resistant to Congress tinkering with the core subject matter provision.

By placing the First Inventor Defense Act of 1999 in Part III of Title 35, Congress avoided the patentability debate and confined its amendment to the enforceability of patent rights. For the reasons set forth in Parts I and II(A), *supra*, the 1999 Amendment was passed in response to the judicial error in *State Street*. This Court should not "place on the shoulders of Congress the burden of the Court's own error." *Girouard v. United States*, 328 U.S. 61, 69-70 (1946) (holding that the passage of the Second War Powers Act of 1942 did not constitute Congressional acquiescence to previous decisions incorrectly construing the War Powers Act of 1940). To read that provision to override more than two centuries of jurisprudence as well as § 101 without an express statement to that effect would be unwarranted and unwise.

III. Economic Research Cautions Against Extending Patent Protection to Business Methods

Several briefs suggest, without substantiation, that a categorical exclusion of business method patents or some limits on the patentability of computer software would greatly impair innovation and economic activity.[13] The relevance of this argument to

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[13] *See, e.g.*, Brief *Amici Curiae* of 20 Law and Business Professors, 18 ("Expanding these categorical denials of patentability beyond this well-established core of exceptions would work a harm of unpredictable magnitude on the incentives to innovate in the United States."); Brief for the Business Software Association as *Amicus Curiae*, 7 ("Simple economics suggests that, if patent protection for software were

(Continued on following page)

constitutional or statutory interpretation in this case is attenuated at best. Nonetheless, we believe that it is important to provide the Court with a more balanced account of the economic effects of extending patent protection to business methods.

Economic research has shown that the relationship between patent protection and innovation is complex and often diverges from the naive and romantic incentive story being asserted in several briefs supporting the patentability of non-technological arts. *See generally* Peter S. Menell & Suzanne Scotchmer, *Intellectual Property Law*, in *Handbook of Law and Economics* 1479-1524 (A. Mitchell Polinsky and Steven Shavell, eds. 2007). Patent-based incentives are crucial for promoting invention in industries, such as pharmaceuticals, where prospective inventors face high expected research costs and rapid imitation. *See* Joseph A. DiMasi, Ronald W. Hansen & Henry G. Grabowski, *The Price of Innovation: New Estimates of Drug Development Costs*, 22 J. Health Econ. 151 (2003) (estimating that the average cost to develop a new drug, including the costs of research projects that were abandoned, is $402 million). Absent patents (and regulatory hurdles), generic drug companies could quickly imitate a successful new drug at a small fraction of this development cost.

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curtailed, the adverse consequences would be swift and severe. . . . software development would suffer.").

But the pharmaceutical industry is not typical. First, few other industries have such a high regulatory burden on initial innovation. Second, imitation is more difficult in most industries. Edwin Mansfield, Mark Schwartz & Samuel Wagner, *Imitation Costs and Patents: An Empirical Study,* 91 Econ. J. 907 (1981), using survey data, find that imitation cost and imitation time are about two-thirds of the original development cost and time on average. Third, pharmaceutical inventions tend to be discrete and pharmaceutical patents tend to feature clear boundaries that make enforcement effective. *See* James Bessen & Michael J. Meurer, *Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovators at Risk* 107, 153 (2008). The social value of patents tends to be lower in fields, including business method innovations, characterized by cumulative innovation and fuzzy patent boundaries. *See* Federal Trade Commission, *To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy* (2003).

Economic evidence indicates that the social costs of business method patents are significant and the social benefits are small compared to those costs.

A. The Social Costs of Business Methods Are Significant

Patent grants entail significant social costs – including impeding follow-on research and competition – and hence the net impact on innovation can be complex and ambiguous. When inventors work on different but complementary research lines, they each can benefit from unconstrained access to the inventions of others. "[W]hen innovation is sequential and complementary, standard conclusions about patents and imitation may get turned on their heads. Imitation becomes a spur to innovation, whereas strong patents become an impediment." James Bessen & Eric S. Maskin, *Sequential Innovation, Patents, and Imitation,* 40 RAND J. Econ. 611, 613 (2009).

The effects of patents on cumulative innovation depend critically on the transaction costs relating to licensing. *See* Menell and Scotchmer, *supra*, at 1499-1506. Such costs can be particularly high in areas – such as business method patents – where claim scope is vague due to notice problems and attendant litigation uncertainty. *See* Bessen & Meurer, *supra*, at 46-72. Innovators have difficulty clearing rights before making investments or taking steps to avoid infringement. This results in enormous cost from opportunistic lawsuits. Furthermore, patent examiners and courts have difficulty evaluating patents with fuzzy boundaries.

Empirical evidence reveals both negative and positive effects of patents on the pace of cumulative innovation. A high concentration of software patents in a particular market discourages entry, especially when patent rights are ambiguous and transaction costs are likely to be high. *See* Iain M. Cockburn & Megan MacGarvie, *Entry, Exit and Patenting in the*

Software Industry, NBER Working Paper No. 12563 (2006). This deterrent effect is strongest for small, new firms. *Id.* Furthermore, a high concentration of patents delays venture capital funding for new software firms. Iain M. Cockburn & Megan MacGarvie, *Patents, Thickets and the Financing of Early-Stage Firms: Evidence from the Software Industry*, 18 J. Econ. & Manag. Strategy 729 (2009). On the positive side, an entrant's own patents may facilitate financing and entry into markets subject to a high concentration of others' patents. *Id.*

Consider a business method patent recently asserted against Google, AOL, Microsoft, Yahoo! and others. *Performance Pricing, Inc. v. Google, Inc.*, Civil Action No. 2-07cv432, 2009 WL 2497102 (E.D. Tex., August 13, 2009). The patent covers a method of "conducting business transactions over the Internet, allowing buyers to reduce the price of the selected product/service based on the buyer's performance during a collateral activity." *Id.* at *1. The number and size of the defendants in this lawsuit illustrates the broad potential reach and potential liability exposure of such patents. It appears that the patent has failed as property in one of two ways. Either major Internet firms brazenly pirated patented technology from a small inventor, or they independently created technology and were not able to avoid subsequent patent litigation.

The patent asserted in *Performance Pricing* contains broad and vague language that might be read to cover Internet ad auctions or other activities by the defendants. Even though the patent discloses nothing about Internet ad auctions, the defendants still must be wary. Microsoft, Yahoo! and others have settled with the patent owner. *See* Samuel Howard, *Microsoft Exits Dispute Over Online Ad Patent*, Law360, June 2, 2009, http://www.law360.com/articles/109339. Given the potentially devastating stakes, high cost of discovery and mounting a defense, business disruption of litigation, adverse publicity from being sued, and uncertainty over the outcome, many defendants license patents or settle lawsuits even when they stand a good chance of prevailing. *See* Michael J. Meurer, *Controlling Opportunistic and Anti-Competitive Intellectual Property Litigation*, 44 B. C. L. Rev. 509 (2003); Joseph Farrell & Carl Shapiro, *How Strong are Weak Patents?*, 98 Amer. Econ. Rev. 1347 (2008). These costs discourage and distort innovation.

There is little that businesses can do to insure against this risk. Firms in the information, communications, and finance industries find that rights clearance is usually impractical because patent boundaries are too hard to decipher and the number of potentially relevant patents is too great. *See* Bessen & Meurer, *supra*, at 70 ("According to David M. Martin, CEO of a patent risk-management firm, 'if you're selling online, at the most recent count there are 4,319 patents you could be violating. If you also planned to advertise, receive payments for or plan shipments of your goods, you would need to be concerned with approximately 11,000.' "); Mark A.

Lemley, *Ignoring Patents*, 2008 Mich. St. L. Rev. 19, 21.[14] Behavior is radically different in industries where patent boundaries are relatively clear, enabling patents to function like tangible forms of property. Pharmaceutical firms read patents and work hard to license necessary patent rights before investing in drug development. *See* Benjamin N. Roin, *Unpatentable Drugs and the Standards of Patentability,* 87 Texas L. Rev. 503, 545-47 (2009).

Evidence from patent litigation further illustrates the high costs of business method patents. Such patents are about seven times more likely to be asserted in a lawsuit than the average patent. *See* Bessen & Meurer, *supra* at 153. They are also about seven times more likely to have their claim construction appealed to the Federal Circuit. *Id.* The rate of litigation for finance-related patents is twenty seven to thirty nine times greater than the average patent. *See* Josh Lerner, *The Litigation of Financial Patents*, Harv. Bus. School Working Paper 09-027, 2 (2008).

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[14] Copying by the defendant in patent cases is relatively rare: less than four percent of the cases tried to judgment (and probably less that two percent of the relevant cases). *See* Bessen & Meurer, *supra,* at 126; Christopher A. Cotropia & Mark A. Lemley, *Copying in Patent Law,* 87 N.C. L. Rev. 1421 (2009). In the overwhelming majority of business method enforcement actions, the defendants implemented the allegedly infringing business methods without knowledge of the patent owner's "invention" or the patent.

B. The Social Benefits of Business Methods Are Small Compared to the Social Costs

Economic research casts doubt on whether the social benefits of business method patents outweigh the social costs. In theory, such patents promote innovation by attracting capital for the creation of new business methods and encouraging disclosure of methods that would otherwise be kept secret. "There is at present very little evidence to argue that business method patents have had a significant effect on the R&D investments of financial institutions." Robert M. Hunt, *Business Method Patents and U.S. Financial Services*, Working Paper No. 08-10, Philadelphia Federal Reserve Bank, 27, January 2009. Business and financial methods are more likely to fall into the class of inventions for which the costs of patenting outweigh the benefits due to the impediments to cumulative innovation and the drag of prosecution costs, due diligence, and litigation. *See* Bronwyn Hall, *Business and Financial Method Patents, Innovation, and Policy*, NBER Working Paper No. 14868, 18 (2009).

Business method innovation will continue in the absence of patent protection because there are many other means for appropriating rewards from this type of innovation. Staying ahead of competitors is the most basic and most important incentive. *See generally* Phillipe Aghion, et al., *Competition and Innovation: An Inverted-U Relationship*, 120 Q. J. Econ. 701 (2005); Bessen & Maskin, *supra*. "Panelists [at hearings held by the FTC] consistently stated that competition drives innovation in [software and internet] industries." *See* Federal Trade Commission, *supra* at Ch. 3, p. 44. In addition to lead-time, the sale of complementary goods and services, reputation, tax incentives, research contracts, government grants, trademark protection, and copyright protection play significant roles in supporting innovation. *Cf.* Richard C. Levin et al., *Appropriating the Returns from Industrial R&D*, 3 Brookings Papers on Econ. Activity 783 (1987); Wesley M. Cohen, Richard R. Nelson & John P. Walsh, *Protecting Their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (Or Not),* NBER Working Paper No. 7552 (2000).

Although these surveys do not address business method innovation directly, their results for software are relevant because many business method patents have software implementations. *See* Hunt, *supra* at 1. A recent survey of small, new firms confirms the results in the early surveys which focused mostly on larger firms. "In software, patenting is rated the least important among all the appropriability strategies." *See* Stuart J.H. Graham, et al., *High Technology Entrepreneurs and the Patent System: Results of the 2008 Berkeley Patent Survey,* 28, August 25, 2009, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1429049. Empirical studies indicate that software patents have not stimulated software research. Even though the number of software patents has grown dramatically, there is no associated evidence of growth in software research and development. *See* James Bessen & Robert M. Hunt, *An Empirical Look at Software Patents,* 16 J. Econ. & Manag. Strategy 157 (2007).

Some commentators argue that business method patents induce firms to disclose inventions that would otherwise be kept secret. There is little evidence that this putative benefit is significant (or even exists). Survey evidence suggests that few innovators read patents for their disclosures because the quality of the disclosure is low. *See* Bessen & Meurer, *supra,* at 233. Regardless of disclosure quality, the incentive to patent is undercut by the failure of most countries to permit patents on business methods. There is a strong incentive to maintain secrecy because American patents are of limited value in global financial markets.

In summary, to paraphrase Mark Twain, warnings of "harm of unpredictable magnitude on the incentives to innovate" and "swift and severe" "adverse consequences" from the exclusion of business method patents have been greatly exaggerated. To the contrary, economic research indicates that restoring this well-established limitation on the scope of patentable subject matter could well promote progress, innovation, and competition. Although we doubt that these considerations bear significantly if at all on the interpretive questions before the Court, they should certainly not be weighed on the side of extending patent protection to business methods.

◆

CONCLUSION

The Intellectual Property Clause of the Constitution bars Congress from extending patent protection to non-technological fields, including business methods. Even if constitutional authority exists, Congress perpetuated the well-established business method exclusion in the 1952 Patent Act and the First Inventor Defense Act of 1999 should not be read to override § 101.

The courts and the Patent Office successfully navigated the line between technological and non-technological fields for over two centuries. Patent systems throughout the world continue to do so. Re-establishing technological advance as the touchstone for patent protection in the United States will help to restore confidence in, the efficacy of, and the logic of this vital institution.

Respectfully submitted,

PETER S. MENELL
Counsel of Record
UC BERKELEY SCHOOL OF LAW
Boalt Hall
Berkeley, CA 94720
(510) 642-5489

MICHAEL J. MEURER
BOSTON UNIVERSITY SCHOOL OF LAW
765 Commonwealth Ave.
Boston, MA 02215

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BRIEF

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IN THE
Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,
v.

DAVID J. KAPPOS, UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR, PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ Of Certiorari
To The United States Court Of Appeals
For The Federal Circuit

BRIEF FOR MICROSOFT CORPORATION, KONINKLIJKE PHILIPS ELECTRONICS N.V., AND SYMANTEC CORPORATION AS AMICI CURIAE IN SUPPORT OF RESPONDENT

HORACIO E. GUTIÉRREZ
T. ANDREW CULBERT
MICROSOFT CORPORATION
INTELLECTUAL PROPERTY
& LICENSING
One Microsoft Way
Redmond, WA 98052
(425) 882-8080

MARK A. PERRY
Counsel of Record
MATTHEW D. MCGILL
JASON B. STAVERS
GIBSON, DUNN &
CRUTCHER LLP
1050 Connecticut
Avenue N.W.
Washington, D.C. 20036
(202) 955-8500

Counsel for Microsoft Corporation

ADDITIONAL COUNSEL LISTED ON INSIDE COVER

JACK E. HAKEN
KEVIN C. ECKER
LAURIE GATHMAN
TODD HOLMBO
PHILIPS INTELLECTUAL
PROPERTY & STANDARDS
345 Scarborough Road
Briarcliff Manor, NY 10510
(914) 945-6000

Counsel for Koninklijke Philips Electronics N.V.

JOSEPH T. FITZGERALD
SYMANTEC CORPORATION
LEGAL & PUBLIC AFFAIRS
350 Ellis Street, Bldg. A
Mountain View, CA 94043
(650) 527-2733

Counsel for Symantec Corporation

QUESTION ADDRESSED BY AMICI CURIAE

Whether affirming the rejection of petitioners' application, under the appropriate standard of patent-eligibility, would "exclude[] forms of information-based and software-implemented inventions arising from new technological capabilities." Pet. App. 64a (Newman, J., dissenting).

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BRIEF OF MICROSOFT CORPORATION, KONINKLIJKE PHILIPS ELECTRONICS N.V., AND SYMANTEC CORPORATION AS AMICI CURIAE IN SUPPORT OF RESPONDENT

Microsoft Corporation, Koninklijke Philips Electronics N.V., and Symantec Corporation, as *amici curiae*, respectfully submit that the judgment of the court of appeals should be affirmed.[1]

INTEREST OF AMICI CURIAE

Microsoft's mission is to enable individuals and businesses throughout the world to realize their full potential by creating technology that transforms the way people work, play, and communicate. Microsoft develops, manufactures, licenses, and supports a wide range of software programs and services for many different types of computing devices, including the flagship *Windows* operating system and the *Office* suite of productivity applications.

Koninklijke Philips Electronics N.V. (aka Royal Philips Electronics N.V.) is the parent corporation of a worldwide family of companies ("Philips"). Philips has been inventing and manufacturing electronic and electrical products for over 115 years and is one of the largest users of the patent system in the

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[1] Pursuant to this Court's Rule 37.6, *amici* state that no party's counsel authored this brief in whole or in part, and no person or entity, other than *amici* and their counsel, made a monetary contribution to the preparation or submission of this brief. Counsel of record for both petitioners and respondent have consented to the filing of *amicus* briefs in letters that have been lodged with the Clerk.

United States. Philips began operation as a Nineteenth Century electric lamp manufacturer and its history is rooted in the classic patent battles of the industrial age. Scientists and engineers at Philips' American laboratories have made pioneering advances in the fields of medical diagnosis and imaging, high definition television, optical CD and DVD recording, and digital rights management.

Symantec is a global leader in providing security, storage, and systems management solutions to help its customers—from consumers and small businesses to the largest global organizations—secure and manage their information against risk. Symantec operates in more than 40 countries, and maintains research and development facilities, 24x7 Security Operations Centers, and Security Response Labs around the world. The company holds more than 700 patents in its global patent portfolio, addressing security, systems management, and storage needs for consumers, small business and enterprises.

Individually and collectively, *amici* hold a large number of patents, including patents that claim computer-implemented methods, and they are also frequently sued for infringement by others who hold such patents. *Amici* thus have a profound interest in the patent-eligibility of process patents in general and computer-implemented process claims in particular, as part of their substantial stake in the efficient and fair functioning of the patent system as a whole.

SUMMARY OF ARGUMENT

Because principles are not patentable, petitioners' claimed method of hedging commodities transactions is not patent-eligible and the judgment of the court of appeals should be affirmed, although its exclusive reliance on the "machine-or-transformation" test should be disapproved. That test, as articulated by the Federal Circuit, is not consistent with this Court's cases, and it is already proving unwieldy and confusing to implement. Contrary to the suggestions of petitioners and others, however, affirming the rejection of the application in issue need not—and, under the appropriate standard of patent-eligibility, would not—imperil properly drawn claims describing computer-implemented processes.

I. Some have expressed concern that affirming the rejection of petitioners' application would "exclude[] forms of information-based and software-implemented inventions arising from new technological capabilities." Pet. App. 64a (Newman, J., dissenting). Dispelling that concern requires a basic understanding of how computer-implemented processes work in the real world. While electronic computers have become ubiquitous and almost infinitely varied in form and function, virtually all of them rely for their operation on the same physical activity—the routing and rerouting of electrical signals by means of on-off switches such as transistors. A "hardware" device, such as a laptop computer, contains millions of tiny transistor switches; "software" is the set of instructions that determines the configuration of and directs electrical signals through these switches so that the device will do something useful. While both hardware and software have become increasingly complex, the underlying activity—the sequential operation of switches—has been the basis of patent-eligible processes since at least the Industrial Revolution.

II. Although the Court should be chary of "lin[king] patent eligibility to the age of iron and steel at a time of subatomic particles and terabytes" (Pet. App. 134a (Rader, J., dissenting)), we respectfully submit that the eligibility framework that this Court developed during the Industrial Revolution—an era of tremendous advances in electronic and communications technology—retains its vitality, and relevance, today. While modern digital and computer technologies are vastly more complex and efficient than their precursors, they are built upon the same physical activity as Industrial Age analogues such as Morse's telegraph and Bell's telephone. Interpreting the same constitutional and statutory language that controls today, the Nineteenth Century precedents established that a patent-eligible process must involve one or more *disclosed physical things*—that is, it must describe a series of steps that use physical means to produce a result or effect in the physical world. *See*, *e.g.*, *Tilghman* v. *Proctor*, 102 U.S. 707, 727 (1881) ("Whoever discovers that a *certain useful result* will be produced, in any art [*i.e.*, process] . . . , *by the use of certain means*, is entitled to a patent for it") (emphasis added). This standard is fatal to petitioners' application, but should not imperil the patent-eligibility of properly drawn claims describing computer-implemented processes.

ARGUMENT

Everyone agrees that "a principle is not patentable." *Le Roy* v. *Tatham*, 55 U.S. 156, 174-75 (1853). Petitioners' patent application, which claims a method of hedging commodities transactions, runs smack into this unchallenged prohibition. *See* U.S. Br. 53-54; *see also* Yahoo Br. 34-35; Business Software Alliance Br. 16-18. Indeed, not one of the seventeen amicus briefs filed in support of petitioners offers a credible defense of the actual application at issue in this case. The judgment of the court of appeals, affirming the rejection of petitioners' application, should be affirmed—although, as explained below, its adoption of the "machine-or-transformation" rubric as the exclusive test for patent-eligibility should be disapproved.

Contrary to the suggestions of petitioners and others, affirming the rejection of the application in issue need not, and under the appropriate standard would not, imperil the patent-eligibility of properly drawn claims describing computer-implemented processes. To demonstrate this, we first outline the practical and technological contours of computer-related inventions, and then explain how the patent-eligibility of such inventions can comfortably be resolved within the traditional eligibility framework developed by this Court in response to great advances in electronic and communication technologies during the Nineteenth Century. Under that framework, a patentable process must involve one or more *disclosed physical things*—that is, it must describe a series of steps that use physical means to produce a result or effect in the physical world.[2]

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[2] "Physical" means anything discernible or measurable, including (for example) electromagnetic signals propagated through the air, electric current transmitted by wire, electrostatic or magnetic charges on appropriate media, or photonic impulses through a fiber optic cable. *See* John B. Anderson, *Digital Transmission Engineering* 1-5 (2 ed. 2005).

I. From The Twenty-First Century To The Nineteenth: Innovation Through The Sequential Operation Of Switches

Some knowledgeable observers of our patent system have expressed concern that affirming the rejection of petitioners' application, particularly under the "machine-or-transformation" framework adopted as exclusive by the Federal Circuit majority, could "exclude[] forms of information-based and software-implemented inventions arising from new technological capabilities." Pet. App. 64a (Newman, J., dissenting); *see also* Dolby Br. 10; IBM Br. 17-19; Medtronic Br. 5-11.

Petitioners previously echoed this concern, arguing in their petition that "the Federal Circuit's decision threatens many of the nation's fundamental industries, including software" because it "casts doubt" on "tens of thousands of software patents," leaving them "vulnerable to attack." Pet. 30. Petitioners' merits brief, which concedes that the method claimed in their application "does not necessarily have to be performed on a particular machine or computer" (Pet. Br. 7), fails to make good on this threat; indeed, "software" makes only a brief and non-substantive appearance. *See* Pet. Br. 40.

As the Solicitor General explains, "this case does not present any question as to the application of the machine-or-transformation test to software or yet more novel future forms of industrial or technological processes." U.S. Br. 37. Nevertheless, since the patent-eligibility of computer-implemented processes could obviously be impacted by the Court's resolution of this dispute, this Court should be mindful of this potential impact in articulating any general standard or test for patent eligibility.

Clearly, specific interpretations of the test articulated below have proven problematic. *See*, *e.g.*, Yahoo Br. 9-13; Borland Br. 19-28; AIPPI Br. 28-32; Awaken IP Br. 13-23; Entrepreneurial Software Companies Br. 16-22. Although the *judgment* of the court of appeals is correct, the majority erred in opining that the non-statutory "machine-or-transformation" test is the exclusive measure of patent-eligibility. That test has proven overly difficult to implement in practice. *See* Yahoo Br. 9-17; Dolby Br. 10-11; Regulatory Datacorp Br. 23-26. Moreover, even when that test is useful, it is *descriptive* rather than prescriptive: A process that meets the test is likely to be patent-eligible, but the test itself is not a prerequisite to patentability.

As explained further below, the eligibility standard that has traditionally been applied by this Court requires that a patent-eligible process must involve one or more disclosed physical things—that is, it must describe a series of steps that use physical means to produce a result or effect in the physical world. The inventor must disclose an embodiment of a process that is susceptible to practical application using physical means and disclose those physical means with sufficient particularity to enable others to use the invention. But no particular "machine" is required. *Cochrane* v. *Deener*, 94 U.S. 780, 787-88 (1876) ("A process is a mode of treatment of certain materials to produce a given result. . . . [B]ut the tools to be used in doing this may be of secondary consequence."). In this respect, the error in the majority opinion lies not in its conclusion that the claims in petitioners' application are not patentable (they are not), but in its annunciation of the machine-or-transformation test as the alpha-and-omega of patent-eligibility. *Cf. KSR Int'l Co.* v. *Teleflex Inc.*, 550 U.S. 398, 418 (2007) ("Helpful insights . . . need not become rigid and mandatory formulas").[3]

Computer-implemented inventions are fundamentally and easily distinguishable from the hedging method claimed in petitioners' application using the patent-eligibility framework developed by this Court in precedents dating to the Nineteenth Century. To demonstrate that this Court's Industrial Age precedents are both appropriate and easily applicable to these modern technologies requires a brief discussion of the underlying architecture of digital machines and the real-world implementation of computer processes.

Despite the popular conception of the computer as a quintessentially modern technology, computers predate inventions such as the telephone and telegraph, and date back to the age of steam power and brass gears. Charles Babbage's mechanical computers—the Difference Engine and the Analytical Engine—designed in the Nineteenth Century, were the forerunners of modern computing devices. Anthony Hyman, *Charles Babbage: Pioneer of the Computer* 164-66 (1982) (by 1836, Babbage "had sketched out many of the salient features of the modern computer"). Obviously, there have been enormous advances since the days of Babbage, with mechanical gears giving way initially to electromechanical relays and vacuum tubes, and more recently to semiconductor chips.

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[3] The historical cases focus on achieving a particular outcome or result. *See*, e.g., *Holland Furniture Co.* v. *Perkins Glue Co.*, 277 U.S. 245, 255 (1928) ("A patentable process is a method of treatment of certain materials to produce a particular result or product"); *Waxham* v. *Smith*, 294 U.S. 20, 22 (1935) ("By the use of materials in a particular manner he secured the performance of the function by a means which had never occurred in nature, and had not been anticipated by the prior art; this is a patentable method or process"). A useful result in the "real world" will necessarily involve a physical alteration or manipulation of matter, and (contrary to a suggestion made below, *see* Pet. App. 29a-30a) machines and processes that work with or communicate physically embodied information or data (such as clocks, compasses, thermometers, telephones, and so forth) have historically been considered patentable. That is entirely consistent with the historical standard, which revolves around whether the applicant has described a physical embodiment or implementation that is capable of producing a practical outcome or result.

Today, the term "computer" often denotes the laptop or desktop device that many people use for word processing, e-mail, surfing the Internet, and other applications. While this usage of the term is of course correct, it captures only a little slice of the broad spectrum of computers in common use today. At the high-end, corporations, governments, and educational institutions employ supercomputers—either huge custom-built devices or specialized networks of smaller machines—to perform calculations of a complexity, and at a speed, nearly incomprehensible to the layperson. And at the low-end, small computers are built into (or comprise) a vast array of consumer devices, including digital televisions, cellular telephones, music players and other entertainment devices, videogame consoles, kitchen appliances, thermostats, and so forth. A current-generation automobile includes several computers, which control everything from the fuel-injection system to the antilock brakes; a modern "fly-by-wire" airplane is a highly sophisticated computing system; and the means of controlling traffic, both on land and in the air, depend on complicated computer networks. The list could go on and on. *See* IBM Br. 7, 19-21 (providing numerous examples of the expanding and essential contributions of computers).

The fantastic variety in which computers are now found can obscure the remarkable fact that every single one is, at its heart, a collection of tiny on-off switches—usually in the form of transistors. *See generally* David A. Patterson & John L. Hennessy, *Computer Organization and Design* (4th ed. 2009); Ron White, *How Computers Work* (8th ed. 2005). Just as the configuration of gears and shafts determined the functionality of Babbage's computers, it is the careful configuration of these on-off switches that produces the complex and varied functionality of modern computers.

Today, these on-off switches are usually found in pre-designed packages of transistors commonly known as "chips." Thin wafers of silicon, chips can contain many millions of transistors, connected to one another by conductive materials etched onto the chip like a web of telephone lines. They are organized such that they can be turned on or off in patterned fashion, and by this method, perform simple operations, such as turning *on* every transistor whose corresponding transistor is *off* in the neighboring group. From these building blocks, mathematical and logical operations are carried out. Patterson & Hennessy, *supra*, at 44-47 & App. C.

The challenge for the inventor is how to use these transistors (and applying the principles of logic, physics, electromagnetism, photonics, etc.) in a way that produces the desired functionality in a useful manner. Computer programming is an exercise in reductionism, as every feature, decision, and analysis must be broken down to the level of the rudimentary operations captured by transistors turning on and off. This reductionism is matched by the detail with which transistors must be configured and instructed to carry out the thousands or millions of operations required by the process.

Early electronic computers were "programmed" by laboriously rewiring their electrical pathways so that the computer would perform a desired function. ENIAC—the first general-purpose electronic digital computer, functioning at the midpoint of the Twentieth Century—could take days to program, with operators physically manipulating the switches and cables. Patterson & Hennessy, *supra*, at 1.10.

Fortunately, this is no longer the case. Transistors, packaged onto silicon chips, permit electronic manipulation of the pathways between them, allowing those pathways to be altered to implement different processes without direct physical manipulation. The instructions for this electronic reconfiguration are typically expressed in computer software. *See Microsoft Corp.* v. *AT&T Corp.*, 550 U.S. 437, 445-46 (2007) (noting that, *inter alia*, Windows software renders a general-purpose computer "capable of performing as the patented speech processor").

To allow more sophisticated control over the millions of transistors on a chip, inventors rely on a multi-layered scheme of pre-designed software "languages" that help bridge the gap between the on-off language of the transistor and the words and grammar of human understanding. These allow control of the transistors on a chip at various levels of specificity, ranging from "machine language," which allows transistor-level control, to "programming languages," which allow operations to be defined through formal syntax and semantics that are more easily understood by humans. Each language pre-packages the mathematical and logical operations that are most useful for the users of that particular language. *See* Patterson & Hennessy, *supra*, at 11-13, 20-21, 76-80.

Using these languages, the inventor can create "software" that defines the operations of semiconductor chips and other hardware. These operations are the steps of a computer-implemented process. The role of software is simply to automate the reconfiguration of the electronic pathways that was once done manually by the human operators of ENIAC.[4]

As with any patentable process, it is the real-world implementation—the actual acting out, or physical execution—of the process that makes it new and useful. In a computer-implemented process, the acting out consists primarily of the rapid activation and deactivation of millions of transistors to perform some useful function, such as displaying images and solving problems. Such functions, implemented and made real, physical, and useful by the activity of transistors, are the inventor's actual process.

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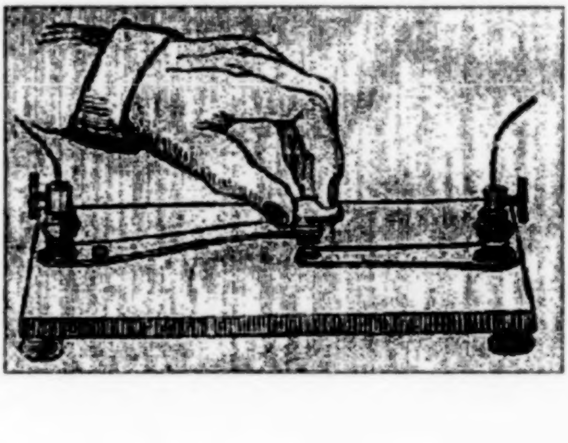
[4] As an aid to comprehension, the reconfiguration is often conceptualized as the computer "running" the software or "executing" the software instructions. In reality, however, when stored as electrical charges, the ones and zeros of the binary code produce electrical currents that literally (but temporarily) reconfigure the electronic pathways running between transistors in the same way that human operators reconfigured the wiring of ENIAC by hand.

While the popular conception of "software" as something that is functionally distinct from "hardware" can be useful, it tends to obscure our understanding of the physical processes taking place within the computers all around us. This is reflected in the commonly used term "software patent," employed by petitioners. So-called "software patents" generally do not actually describe software at all, but rather the process performed by a programmed computer. It is such a computer-implemented process—not software itself—that is potentially eligible for patent protection. *See generally* Examination Guidelines for Computer-Related Inventions, 61 Fed. Reg. 7,478 (Feb. 28, 1996). For this reason, the notion of "software patents" as a category that is distinct from digital hardware patents lacks any coherent technological or legal basis.

Purporting to analyze the patent-eligibility of software, as opposed to that of hardware, relies on an illusory distinction. The functionality of any digital device is the product of the same transistor activity, and it is the configuration of the pathways between those transistors that dictates their functionality. Like all patent-eligible processes, computer-implemented processes *combine* physical activity with human-directed logic. Irrespective of whether a particular configuration of transistors is accomplished using a soldering iron or by means of software, the processes conducted by these transistors are ultimately physical processes. *Cf. Quanta Computer Inc.* v. *LG Elecs., Inc.*, 128 S. Ct. 2109, 2118 (2008).

It follows naturally from this understanding that the innovation that employs a computer to do new and useful things is not necessarily encompassed by the innovations of the transistor (or computer) itself—that is, a new way to use an existing computer may itself be patent-eligible. *See* 35 U.S.C. § 100(b) ("The term 'process' . . . includes a new use of a known process, machine, manufacture, composition of matter, or material"). Although the court below dismissed this statutory text as "unhelpful" (Pet. App. 7a n.3), it confirms that, among other things, each new application of computer technology (at heart, each new use of transistors) which permits computers to perform a useful function is the product of human innovation, the application of principles to the functions of human needs.

In this respect, modern computer-related inventions are no different from other patent-eligible innovations that have produced a new and useful result by employing physical structures and phenomena to record, manipulate, or disseminate information.

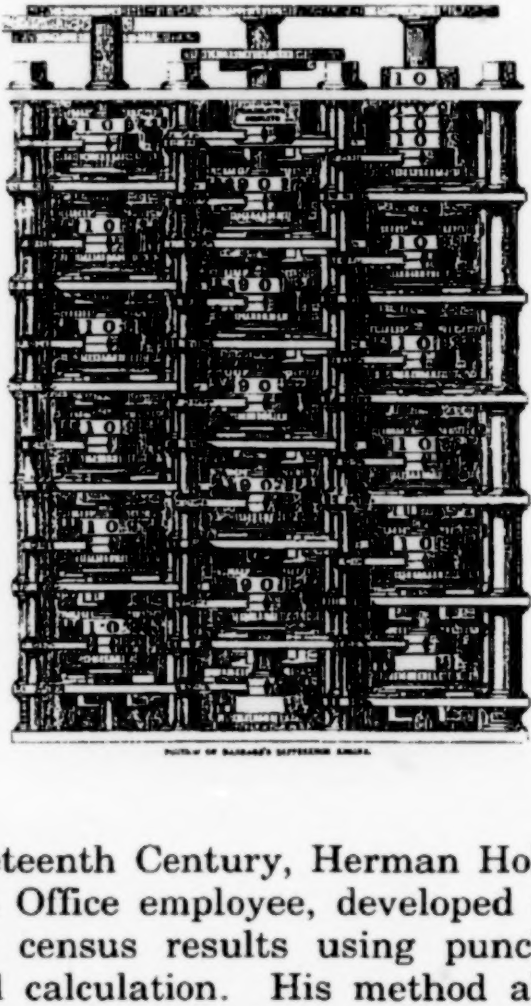


Perhaps the most celebrated example of such technological innovation is Samuel Morse's invention of the electric telegraph, which (like modern computers) employed binary encoding in conjunction with the sequential operation of switches. Although petitioners focus almost exclusively on the Court's rejection of his *eighth* claim (on which more below), the

Court allowed a number of other claims, including the fifth. *O'Reilly* v. *Morse*, 56 U.S. 62, 112 (1854). That claim was for "the system of signs, consisting of dots and spaces, and of dots, spaces and horizontal lines." *Id.* at 86. This system, an early version of Morse Code, was nothing other than a system for manipulating an on-off switch—the telegraph key—in a prescribed manner to produce the useful result of intelligible communications between two parties. Indeed, although much less complex, the telegraph system—a web of interconnected switches spreading around the globe, enabling binary-encoded communication—was comparable to the modern Internet.

The Industrial Age also knew software and hardware in a literal sense; the core concepts in computer design and programming were developed in this period. The principle of encoded instructions controlling a device found application at the opening of the Nineteenth Century, with the famous Jacquard loom, a device (still in use today) that adjusts the warp and weft of a textile in response to "programming" contained on punch cards. The loom's control apparatus consists of a series of on-off switches which are controlled by the pattern of holes punched in the cards, just as the pattern of microscopic pits and lands on the surface of a CD can be used to control the transistor switches inside a computer. Hyman, *supra*, at 166; Patterson & Hennessy, *supra*, at 24.

Inventors soon seized on the "programming" principle applied in the Jacquard loom. A defining characteristic of Babbage's Analytical Engine, for example, was the use of punch cards, adopted from the Jacquard loom, to store the programs run by the machine. "Following the introduction of punched cards early in 1836 four functional units familiar in the modern computer could soon be clearly distinguished: input/output system, mill, store, and control." Hyman, *supra*, at 166. Babbage's close friend, Ada Lovelace (the daughter of Lord Byron), is now recognized as "the first computer programmer" for her work developing software programs for the Analytical Engine. Nell Dale et al., *Programming and Problem Solving with C++* 406-407 (1997).



Later in the Nineteenth Century, Herman Hollerith, a U.S. Census Office employee, developed a means of tabulating census results using punch cards and mechanical calculation. His method allowed the country to complete the 1890 census two years sooner and for five million dollars less than manual tabulation. William R. Aul, "Herman Hollerith: Data Processing Pioneer," *Think* 22-23 (Nov. 1972). The company he founded became the International Business Machines Corp., and the once-prevalent IBM punch-cards were both the direct descendent of the means used to program a Jacquard loom and the immediate predecessor to today's CDs and other media, which contain digitized instructions for modern computers to open and close millions of switches.

As has been often noted by historians of technological development, our perceptions of innovation and modernity are often misguided—the roots of technological change are deep, and run farther back in our history than we perceive. *See* Brian Winston, *Media Technology & Society: A History* 1 (1998) (arguing that current innovations in communications technology are "hyperbolised as a revolutionary train of events [but] can be seen as a far more evolutionary and less transforming process"). That is certainly true with respect to computer-related inventions. While the hardware and software implemented by a modern e-mail program may be orders of magnitude more complex than the dot-dash-dot of a telegraph key, the underlying physical activity that makes communication possible—the sequential operation of switches—is fundamentally the same.

II. From The Nineteenth Century To The Twenty-First: Processes That Involve Disclosed Physical Things Are Patent-Eligible

In a series of cases decided over the course of the Industrial Revolution, this Court gave content to the prohibition against patenting principles by allowing the patentability only of methods that involve disclosed physical things. Although we agree that that the Court should be hesitant to "link[] patent eligibility to the age of iron and steel at a time of subatomic particles and terabytes" (Pet. App. 134a (Rader, J., dissenting)), we submit that those historical precedents retain their vitality, and relevance, today. Indeed, the doctrines laid down by the Court in the Nineteenth Century can resolve most if not all modern questions of patent-eligibility, including those involving computer-implemented process claims.[5]

The Court originally framed the core proscription thusly: "A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right." *Le Roy*, 55 U.S. at 174-75. In the intervening century-and-a-half, the Court has articulated the proposition in varying ways, but the song remains the same: Such ephemera are "free to all men and reserved exclusively to none." *Funk Bros. Seed Co.* v. *Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948).

This prohibition against the patentability of principles is rooted in the plain text of the Patent Act, which (as pertinent here) authorizes patents only for inventions that are both "new" and "useful." 35 U.S.C. § 101 ("Whoever invents or discovers any *new and useful* process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title") (emphasis added).[6]

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[5] In contrast, most of the briefs in this case focus on a bare handful of relatively recent opinions in which the Court considered patent-eligibility. *Diamond* v. *Diehr*, 450 U.S. 175 (1981); *Diamond* v. *Chakrabarty*, 447 U.S. 303 (1980); *Parker* v. *Flook*, 437 U.S. 584 (1978); *Gottschalk* v. *Benson*, 409 U.S. 63 (1972). Since the Court already has been deluged with dozens of duplicative discussions of these decisions, we will not further address them, except to say that they did not overrule, nor do they require departure from, this Court's earlier precedents considering patent-eligibility.

Absent their novel application in the real world, principles are not "new" inventions. They, "like the heat of the sun, electricity, or the qualities of metals, are part of the storehouse of knowledge of all men . . . He who discovers a hitherto unknown phenomenon of nature has no claim to a monopoly of it which the law recognizes." *Funk Bros.*, 333 U.S. at 130. This inventiveness element is distinct from (and a prerequisite to) the novelty requirement imposed by Section 102, which is concerned with who *first* disclosed an invention that is otherwise patent-eligible.

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[6] In addition to subject-matter eligibility, the Patent Act imposes an array of other limitations on putative patent claims, which can serve as effective checks on attempts to evade the requirements of Section 101 through abusive claim drafting. *See* Novartis Br. 11-13. Section 102, which requires novelty, and Section 103, which requires non-obviousness over the prior art, buttress Section 101's prerequisite that the claimed invention be "new and useful." Sections 111 through 115 place requirements on the application, ensuring that any claims that survive the earlier analysis are fairly drawn against the actual invention. In addition to ensuring the proper disclosure of the innovation, these requirements buttress the requirements of the earlier sections. They—and the claim-drafting directives of Section 112, in particular—provide additional means by which courts can test assertions made in the claims and specification about the aspects of the invention that establish its patent-eligibility, novelty and non-obviousness. *See Morse*, 56 U.S. at 117-18 (noting that the claimant in *Le Roy* "was entitled to a patent for the new process or method in the art of making lead pipe, which this discovery enabled him to invent and employ; and *was bound to describe such process or method, fully, in his specification*") (emphasis added).

Disembodied principles in themselves also are not "useful" in the sense of Section 101.

> The basic *quid pro quo* contemplated by the Constitution and the Congress for granting a patent monopoly is the benefit derived by the public from an invention with substantial utility. Unless and until a process is refined and developed to this point—where specific benefit exists in currently available form—there is insufficient justification for permitting an applicant to engross what may prove to be a broad field.

Brenner v. *Manson*, 383 U.S. 519, 534 (1966). Like the inventiveness element, the prerequisite of usefulness is separate from, and precedes, the "use" requirement imposed by Section 112 (first paragraph), which is concerned with the adequacy of disclosure of an invention that is otherwise patent-eligible.

This prohibition on patenting principles is of constitutional dimension. "Congress may not authorize the issuance of patents whose effects are to remove existent knowledge from the public domain, or to restrict free access to materials already available." *Graham* v. *John Deere Co.*, 383 U.S. 1, 6 (1966). Such a patent would not "promote the Progress of . . . useful Arts." Art. I, § 8, cl. 8; *see also Lab Corp. of Am. Holdings* v. *Metabolite Labs., Inc.*, 548 U.S. 124, 126-27 (2006) (Breyer, J., dissenting from dismissal of certiorari).

Physical things (devices, engines, etc.) often depend on principles, such as the laws of physics and thermodynamics, for their successful or efficient operation; but they are embodiments or instantiations of such principles rather than the principles themselves. *See, e.g.*, *Eibel Process Co.* v. *Minnesota & Ontario Paper Co.*, 261 U.S. 45 (1923) (patented paper-making machine applied the principle of gravity to improve efficiency). In contrast, a process (or method) claims a series of steps for doing something, rather than the thing itself. Such a claim may well be patent-eligible (*see, e.g.*, *Cochrane*, 94 U.S. 780 at 787), but requires scrutiny to ensure that what is claimed is not merely an unpatentable abstract principle.[7]

The statutory and constitutional bases of patent-eligibility have been in place since the Founding. *See Graham*, 383 U.S. at 5-12. To be sure, Congress has enacted intellectual-property legislation in response to specific technological advances. *See, e.g.*, Plant Variety Protection Act of 1970, 7 U.S.C. §§ 2321-2582. But the Patent Act does not differentiate among the useful arts, and it certainly does not single out computer-related inventions for special treatment. Accordingly, the continued relevance of these basic precepts to patents claiming technological advances is best understood by reference to an earlier period of transformational innovation.

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[7] Three of the statutory categories of patent-eligible subject-matter (machines, manufactures, and compositions of matter) are not before the Court in this case. This is important, because many computer-related inventions are comprised of, or include, product (machine or system) claims—and a programmed computer is itself a patent-eligible machine if it meets the other requirements for patentability. *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994) (en banc). This dynamic is neither novel nor computer-specific. *See Leeds & Catlin Co.* v. *Victor Talking Mach. Co.*, 213 U.S. 301, 318 (1909) ("A process and an apparatus by which it is performed are distinct things. They may be found in one patent; they may be made the subject of different patents.").

At the dawn of the Industrial Age, this Court recognized both the patentability of processes and the challenge of distinguishing unpatentable "principles" from patent-eligible processes in a celebrated series of cases arising from that era's remarkable innovations in communication technology.

While the telegraph and wire-line telephone may seem commonplace, even archaic, in the light of modern computer and telecommunications innovations, the parallels, and continuity, between these historical innovations and those of our own age should not be underestimated. Nineteenth Century assessments certainly had a familiar ring of hyperbole. *See, e.g.,* Edward Highton, *The Electric Telegraph: Its History and Progress* 1-2 (1852) ("What an age of wonders is this! When one considers the state of Science a century ago, and compares the light of the past with that of the present day—how great is the change! how marvellous the advance! . . . Few inventions have created so great surprise and delight as that of the Electric Telegraph."); *id.* at 178 ("Time and space are all but annihilated. Years are converted into days, days into seconds, and miles have become mere fractions of an inch."). And modern scholars have often recognized the similarity, and continuity, between these Nineteenth Century innovations and those of the modern era. *See, e.g.*, Daniel Walker Howe, *What Hath God Wrought: The Transformation of America, 1815-1848* 1-2 (2007) (arguing that the telegraph "was destined to change the world," and that, together with the railroad, its "consequences certainly rivaled, and probably exceeded in importance, those of the revolutionary 'information highway' of our own lifetimes").

And, notably, the contemporaneous observations of this Court demonstrate that while inventions are always new, invention itself decidedly is not.

> The electric telegraph marks an epoch in the progress of time. In a little more than a quarter of a century it has changed the habits of business, and become one of the necessities of commerce. It is indispensable as a means of intercommunication, but especially is it so in commercial transactions.

Pensacola Tel. Co. v. *W. Union Tel. Co.*, 96 U.S. 1, 9-10 (1877). Today, "the Internet" could be substituted for "electric telegraph" and the Court's observations hold true in the Twenty-First Century.

Asked during this prior period of technological change to resolve the patent-eligibility of its pivotal inventions, this Court relied upon and refined the bedrock notion that principles are not patentable, but their useful applications may be. And it found that physical implementation—the use of disclosed physical means—defined the line separating principle from a practical application.

In one of the most famous cases defining this distinction between an unpatentable "principle" and a patent-eligible process, the Court limited its approval of Samuel Morse's patent to the physical method he had developed for telegraphy, described in the fifth claim and elsewhere, and excluded the underlying principle (as described in the eighth claim)—which, by itself, was not useful. "[Morse] has [discovered] a method by which intelligible marks or signs may be printed at a distance. And for the method or process thus discovered, he is entitled to a patent. But he has not discovered that the electro-magnetic current, used as motive power, in any other method, and with any other combination, will do as well." 56 U.S. at 117.

A generation later, considering Alexander Graham Bell's telephone patent, the Court repeated this distinction between principle and useful process. "[E]lectricity, left to itself, will not do what is wanted. The art consists in so controlling the force as to make it accomplish the purpose." *The Telephone Cases*, 126 U.S. 1, 532 (1888). And it drew the line even more finely than in *Morse*, approving Bell's patent not for a method tied to a working apparatus (indeed, Bell's actual device did not yet work when he applied for the patent (*id.* at 535)), but on the physical manner of manipulating electricity to render it capable of transmitting voice. "[Bell] found out that, by changing the intensity of a continuous current so as to make it correspond exactly with the changes in the density of air caused by sonorous vibrations, vocal and other sounds could be transmitted and heard at a distance. This was the thing to be done, and Bell discovered the way of doing it." *Id.* at 538-39. "Bell's patent is not alone for the particular apparatus he describes, but for the process that apparatus was designed to bring into use." *Id.* at 540.

The telling difference between the claims before the Court in these seminal cases was that Bell's eligible claimed process described the manipulation of a physical thing, an electrical current, which made it useful, while Morse's ineligible eighth claim stopped short of that essential inventive contribution. Bell's claim specifically described a *method* for using electric current for transmitting speech that operated on a physical thing, the electric current: "by causing electrical undulations, similar in form to the vibrations of the air accompanying the said vocal or other sounds." 126 U.S. at 531. This was a substantial step forward in the art, as the Court explained, an innovation that had not occurred to Bell's many competitors. *Id.* at 540-41. Morse's ineligible claim, by contrast, provided no such physical implementation, and merely described the abstract principle of using electrical current to write at a distance: "[T]he essence of my invention being the use of the motive power of the electric or galvanic current, which I call electro-magnetism, however developed for marking or printing intelligible characters, signs, or letters, at any distances." 56 U.S. at 112. Bell's claim consisted of an operative, physical process, while Morse's described only the objective of an unspecified process.

Indeed, this theme runs throughout the Court's leading precedents.

In *Le Roy*, the Court did not ultimately rule on the eligibility of the patent claim, but its language clearly indicated that it expected that a physically implemented process would satisfy Section 101. *See* 55 U.S. at 175-76. And the critical issue in the English case that so interested this Court in *Le Roy* (and for years thereafter) was that the inventor had designed a physical manner of injecting hot air into a furnace, and was not merely seeking to patent the principle that so doing would increase a furnace's power. *Id.* (discussing *Househill Co.* v. *Neilson*, 151 ER 1266 (1841)). Seven years later, when the lawsuit in *Le Roy* returned to the Court on a related question, the Court was even more express about the role that physical embodiment could play in patent eligibility.

> However brilliant the discovery of the new principle may be, to make it useful it must be applied to some practical purpose. . . . "There can be no patent for a principle; but for a principle so far embodied and connected with corporeal substances as to be in a condition to act and to produce effects in any trade, mystery, or manual occupation, there may be a patent."

Le Roy v. *Tatham*, 63 U.S. 132, 137 (1859) (quoting Alderson B. Webster's Patent Cases, 683) ("*Le Roy II*").

These cases teach that physical implementation of a principle in a useful manner addresses (and, in most if not all cases, resolves) the prohibition against patenting principles, which inheres in Section 101. The added complexity of the court of appeals' "machine-or-transformation" formulation does not improve on this Court's clearer understanding: a process that makes use of a disclosed physical thing, and produces a measurable result in the physical world, does something more than describe an unpatentable principle—it is an application of that principle.

To be patent-eligible, therefore, a claimed method must involve one or more *disclosed physical things*—that is, it must describe a series of steps that use physical means to produce a result or effect in the physical world.

Indeed, this standard (and not "machine-or-transformation") has been the law for more than a century. *See Tilghman*, 102 U.S. at 727 ("Whoever discovers that a certain useful result will be produced, in any art [*i.e.*, process], machine, manufacture, or composition of matter, *by the use of certain means*, is entitled to a patent for it") (emphasis added). As explained in a Nineteenth Century treatise, the patentee must describe "a practical application to some useful purpose . . . and his specification must show the application of the principle to such a special purpose, by its *incorporation with matter* in such a way as to be in a condition to produce a practical result." George Ticknor Curtis, *A Treatise on the Law of Patents for Useful Inventions as Enacted and Administered in the United States of America* § 242 (4th ed. 1873) (emphasis added). The author explains that "wherever a claim does in truth sever the use of a motive-power or other elemental agency from all conditions of its application in the arts, and presents *it only* as a *causa causans* of a result, it is void; because some practical means of producing the result is the necessary link between cause and effect." *Id.* at § 160 (emphasis in original). Thus, while a disembodied principle is unpatentable, "a principle or function *embodied in a particular organization of matter* for a particular purpose . . . is patentable." *Id.* at § 242 (emphasis added).

This standard should suffice for the next 100 years as well. This Court has consistently grounded its patent jurisprudence in historical context, properly declining invitations to abandon long-standing doctrines even in the face of technological change. *Microsoft*, 550 U.S. at 444 (relying on *Brown* v. *Duchesne*, 60 U.S. 183 (1857)); *see also, e.g.*, *Pfaff* v. *Wells Elecs., Inc.*, 525 U.S. 55, 62 (1998) (applying "the reasoning of *The Telephone Cases* to the facts of the case before us today," which involved the application of the on-sale bar in a case involving computer chip socket design); *Bonito Boats Inc.* v. *Thunder Craft Boats Inc.*, 489 U.S. 141, 149-52 (1989) (relying on *Pennock* v. *Dialogue*, 2 Pet. 1 (1829), and other early cases).

Technological innovation has been transforming the Nation since the Founding, and continued advances today (and in the future) only confirm the relevance of this Court's historical case law. As this Court observed over 130 years ago, the powers granted by the Constitution "extend from the horse with its rider to the stage-coach, from the sailing-vessel to the steamboat, from the coach and the steamboat to the railroad, and from the railroad to the telegraph." *Pensacola Tel.*, 96 U.S. at 9. The parallel chains of continuity that connect both technology and law across the eras of our history teach that the Court's observation can and should be updated: "and from the telegraph through the telephone, to the Internet, and beyond."

To reiterate (and conclude), this Court has long recognized that a patent-eligible method must involve one or more *disclosed physical things*—that is, it must describe a series of steps that use physical means to produce a result or effect in the physical world. This test for patent-eligibility has withstood the test of time, and it is sufficiently flexible to accommodate technological advances. The inflexible machine-or-transformation test, in contrast, is not compelled by this Court's historical precedents. Indeed, the older cases cited by the government (*see* U.S. Br. 29-30) are far more consistent with the standard proposed by this brief than the government's alternative formulation.

Computer-implemented process claims, in general, will meet the standard historically employed by this Court, which should be retained and reaffirmed. In contrast, because the hedging method described in petitioners' application is not sufficiently "embodied and connected with corporeal substances" (*Le Roy II*, 63 U.S. at 137), it is not patent-eligible under Section 101.

CONCLUSION

The judgment of the court of appeals should be affirmed.

Respectfully submitted.

HORACIO E. GUTIÉRREZ
T. ANDREW CULBERT
MICROSOFT CORPORATION
INTELLECTUAL PROPERTY
& LICENSING
One Microsoft Way
Redmond, WA 98052
(425) 882-8080

MARK A. PERRY
Counsel of Record
MATTHEW D. MCGILL
JASON B. STAVERS
GIBSON, DUNN &
CRUTCHER LLP
1050 Connecticut
Avenue N.W.
Washington, D.C. 20036
(202) 955-8500

Counsel for Microsoft Corporation

JACK E. HAKEN
KEVIN C. ECKER
LAURIE GATHMAN
TODD HOLMBO
PHILIPS INTELLECTUAL
PROPERTY & STANDARDS

345 Scarborough Road
Briarcliff Manor,
NY 10510
(914) 945-6000

Counsel for Koninklijke
Philips Electronics N.V.

JOSEPH T. FITZGERALD
SYMANTEC CORPORATION
LEGAL & PUBLIC AFFAIRS
350 Ellis Street, Bldg. A
Mountain View, CA 94043
(650) 527-2733

Counsel for Symantec
Corporation

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AMICUS
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In The
Supreme Court of the United States

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BERNARD L. BILSKI and RAND A. WARSAW,

Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY
OF COMMERCE FOR INTELLECTUAL
PROPERTY AND ACTING DIRECTOR,
PATENT AND TRADEMARK OFFICE,

Respondent.

◆

On Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

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BRIEF OF MONOGRAM BIOSCIENCES, INC. AND GENOMIC HEALTH, INC. AS *AMICI CURIAE* IN SUPPORT OF NEITHER PARTY

◆

NARINDER S. BANAIT
Counsel of Record
TYLER BAKER
DANIEL R. BROWNSTONE
STUART P. MEYER
ROBERT R. SACHS
FENWICK & WEST LLP
801 California Street
Mountain View, CA 94041
(650) 988-8500

H. THOMAS ANDERTON, JR.
MONOGRAM BIOSCIENCES, INC.
345 Oyster Point Blvd.
South San Francisco, CA 94080
(650) 624-4198

KATHLEEN DETERMANN
GENOMIC HEALTH, INC.
301 Penobscot Drive
Redwood City, CA 94063
(650) 556-9300

Counsel for Amici Curiae

COCKLE LAW BRIEF PRINTING CO. (800) 225-6964
OR CALL COLLECT (402) 342-2831

QUESTIONS PRESENTED

1. Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

2. Whether the Federal Circuit's "machine-or-transformation" test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273.

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INTEREST OF THE *AMICI CURIAE*[1]

Personalized medicine is universally acknowledged to hold enormous potential for treating diseases, improving the quality of patients' lives and streamlining the drug discovery and development process. Personalized medicine uses molecular diagnostic tests to correlate genetic and molecular biomarkers with clinically useful disease characteristics. The technology has already delivered tremendous results for individual patients, and current research efforts and clinical trials promise significant future improvements in health care.

Personalized medicine companies are typically small and rely on private investment capital to sustain them through the lengthy and expensive research, development and commercialization process. Developing the tests is time consuming and expensive. Personalized medicine companies literally flourish or fail based on their ability to build patent portfolios protecting diagnostic correlations.

The success of personalized medicine in the diagnosis and treatment of breast cancer has been unexpectedly spectacular. Modern sophisticated molecular diagnostic tests allow providers to identify the

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[1] In accordance with Sup. Ct. R. 37, the *Amici* state that this brief was not authored in whole or in part by counsel to a party, and that no monetary contribution to the preparation or submission of this brief was made by any person or entity other than these *Amici Curiae* or their counsel.

30% of patients who have breast cancer tumors that over-express human epidermal growth factor receptor 2 (HER2). These patients can be treated with trastuzumab, an antibody that is more effective and less toxic than traditional chemotherapy or radiation therapy.

Monogram Biosciences, Inc. and Genomic Health, Inc. are publically traded companies recognized as world leaders in the emerging field of personalized medicine. Monogram Biosciences currently offers the HERmark® breast cancer diagnostic assay that accurately quantifies HER2. HERmark® identifies patients likely to respond to trastuzumab with greater precision than currently available tests. In addition, Monogram offers five distinct HIV drug resistance assays used to individualize the selection of antivirals for HIV treatment. Monogram's HIV assays provide a direct measure of the patient's virus' ability to survive in the presence of specific antiviral drugs and are often the primary tests relied on by physicians to determine which HIV drugs will be effective in a specific patient.

Genomic Health currently offers the Onco*type* DX® assay that provides information on the likelihood that a breast cancer patient will experience (1) a recurrence of a tumor; and (2) a clinically beneficial response to chemotherapy. In addition, Genomic Health has completed validation of a colon cancer prognostic assay which it expects to offer commercially in 2010.

Essential to *Amici* is their ability to obtain meaningful proprietary protection for their key discoveries: diagnostic correlations. *Amici* expend tremendous resources in obtaining tumor samples, assaying the samples to discover correlations and searching through and analyzing the results for meaningful statistical significance that could identify those correlations. There are literally hundreds of unsuccessful attempts made for each identified correlation.

Amici have an interest in ensuring that patent claims to the discovered diagnostic correlations remain patentable. *Amici* would have difficulty in continuing with their mission of developing products for patients in the absence of meaningful patent protection. The application of the machine-or-transformation test as adopted by the Federal Circuit to the diagnostic correlations forecloses the ability of *Amici* to obtain commercially meaningful protection for its discovery and products, and threatens the future of the entire field of personalized medicine. Patients can only suffer.

Amici will focus on the first question presented as it relates to correlation claims often sought by personalized medicine companies.

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SUMMARY OF ARGUMENT

The patent system creates incentives for research into discovering correlations between biomarkers and diseases to improve diagnostic tests thereby creating a virtuous cycle progressing science to the benefit of patients and society. The Federal Circuit's requirement that all claims recite a "physical" step, such as a machine or physical transformation step, jeopardizes the future of research in personalized medicine by making many biologically-based inventions unpatentable under 35 U.S.C. § 101. In the end, fewer personalized medicine avenues will be explored and brought to market, and patients will suffer.

The Federal Circuit erred in holding that a process must be tied to a particular machine or apparatus or transform a particular article into a different state or thing to be eligible for patent protection under 35 U.S.C. § 101. The machine-or-transformation test may work in a few cases for determining whether a particular claim is patent-eligible, but it results in "false negatives" for the majority of cases. Specifically, it has been applied to find some claims, such as those on the actual diagnostic correlations, to be patent-ineligible. *Amici* urge the Court to adopt a framework for patent-eligible subject matter that accords with the existing law, a framework that determines that non-physical processes are patent-eligible, a framework that will foster development of personalized medicine technologies.

Consistent with this Court's precedent, *Amici* propose that the Court articulate a framework that considers as a threshold step whether a fundamental principle (i.e., a law of nature, a phenomenon of nature or an abstract idea) is claimed. For application of the framework, the terms *law of nature*, *natural phenomenon* and *abstract idea* should be construed in the ordinary English sense each as a universal principle having a central role in scientific practice and each as being fundamental. If a law of nature, natural phenomenon or abstract idea is not claimed, the claimed subject matter describes a patent-eligible process. If one of these is claimed, the Court should turn its attention to secondary considerations such as whether the patent claim entirely preempts the law of nature, natural phenomenon or abstract idea. Such a determination can take into account whether the claimed method involves a machine-or-transformation step, but not as the sole determinative test for patentability. *Amici* believe that once the Court sets forth a definitive test, the Court will determine that claim 1 in Bilski's application is patent-eligible because it does not claim a law of nature, natural phenomenon or abstract idea. Similarly, the claims important to personalized medicine companies, claims to the discovered correlations, will be patent-eligible since they also do not involve laws of nature, natural phenomena or abstract ideas.

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ARGUMENT

I. PATENTABLE PROCESSES CAN BE EITHER PHYSICAL OR NON-PHYSICAL

35 U.S.C. § 101 provides the basis for patent-eligibility:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title.

The statute states that there are four separate and distinct categories of patentable subject matter, namely: 1) processes, 2) machines, 3) manufactures or 4) compositions of matter. In addition, 35 U.S.C. § 100(b) provides a broad statutory definition for a process to be used in 35 U.S.C. § 101:

> The term "process" means process, art, or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.[2]

According to the Oxford English Dictionary, a "process" can be defined as:

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[2] The statutory provision on what constitutes patentable subject matter has essentially been the same since 1793. Until the Patent Act of 1952, the patent statutes used the word "art." The 1952 Act substituted the word "process." To emphasize that no change of meaning was intended, a process was defined as ". . . any process, art or method . . ." 35 U.S.C. § 100(b).

> A continuous and regular action or succession of actions, taking place or carried on in a definite manner, and leading to the accomplishment of some result; a continuous operation or series of operations (The Oxford English Dictionary 6 (2d ed. 1989)).

The term "process" thus does not have a special meaning that would exclude non-physical processes from patent eligibility under 35 U.S.C. § 101.

Nor is there any basis for concluding that the Constitution imposes a requirement that non-physical processes be excluded. According to this Court, Congress has the authority to include non-physical subject matter within the scope of patent-eligible subject matter.[3] In the encompassing language as it used in § 101, Congress chose not to limit patentable subject matter to only physical subject matter; the only limitations are that the subject matter be "new and useful."[4]

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[3] *See e.g., Gottschalk v. Benson,* 409 U.S. 63, 72 (1972), where the Court stated, "It may be that the patent laws should be extended to cover these programs, a policy matter to which we are not competent to speak." *See* also, 35 U.S.C. § 273 and 145 Cong. Rec. H11769, at 11801 (daily ed. Nov. 9, 1999) ("Jt. Conf. Report"), where, in discussing Title 35, Congress expressed the intent that the patent laws may be drawn to physical as well as non-physical limitations.

[4] Other *Amici* extensively treat what it means for a process to be "useful." Accordingly, this brief will not repeat such detailed analysis.

> This Court has consistently and explicitly refused to limit a process to the purely physical. In *Gottschalk v. Benson,* 409 U.S. 63, 71 (1972), even as the Court was denying the patentability of a method of converting binary signals from one form to another, citing *Waxham v. Smith et al.,* 294 U.S. 20 (1935), the Court could not have more clearly stated that a process need not have a machine-or-transformation, a physical step, to be patentable: It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.

Gottschalk, 409 U.S. at 71. In *Parker v. Flook,* 437 U.S. 548, 589 n.9 (1978), the Court repeated and strengthened this rationale:

> The statutory definition of process is broad. An argument can be made, however, that this Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a "different state or thing." *See Cochrane v. Deener*, 94 U.S. 780, 787-788 (1876). As in *Benson,* we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents. (internal citations omitted)

Accordingly, the Court has consistently made it clear that the process category of 35 U.S.C. § 101 should be interpreted broadly to include all subject matter, physical and non-physical.[5] Other than the proscribed categories of laws of nature, phenomena of nature and abstract ideas (*see, e.g., Gottschalk v. Benson,* 409 U.S. 63 (1972); *Parker v. Flook*, 437 U.S. 584 (1978) and *Diamond v. Diehr*, 450 U.S. 175 (1981)) all processes, both physical and non-physical, are patent-eligible.

Amici would urge this Court to hold that processes include all subject matter, physical and non-physical.

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[5] Congress has also expressed its intent that a process should include the physical as well as the non-physical. *See, e.g.*, Jt. Conf. Report at 11801, where they indicate that they believe that a process is not limited to the physical but should also include the non-physical.

II. THE FEDERAL CIRCUIT ERRED IN HOLDING THAT A PROCESS MUST BE TIED TO A PARTICULAR MACHINE OR TRANSFORM A PARTICULAR ARTICLE INTO A DIFFERENT STATE OR THING

A. The Federal Circuit Erred In Holding That A "Process" Must Be Tied To A Particular Machine Or Apparatus, Or Transform A Particular Article Into A Different State Or Thing ("Machine-Or-Transformation" Test), To Be Eligible For Patenting Under 35 U.S.C. § 101

Despite admonitions from the Supreme Court, in *Bilski,* the Federal Circuit adopted the physical limitation requirement of the machine-or-transformation test as the *sole test*, effectively denying patentability to much patent-eligible subject matter. Though the Federal Circuit adamantly denied that the machine-or-transformation step required a physical step,[6] the test it ultimately adopted clearly does require a physical step. In articulating the 'transformation' prong of the machine-or-transformation test, the Federal Circuit stated:

> Purported transformations or manipulations simply of public or private legal obligations or relationships, business risks, or other such abstractions cannot meet the test

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[6] *In re Bilski,* 545 F.3d 945, 963 (2008), *see id.*, at 964, where the Federal Circuit explicitly stated that it was rejecting any notion of a physical steps test.

> because they are not *physical objects* or substances, and they are not representative of *physical objects* or substances.[7] (emphasis added)

Thus, the Federal Circuit adopts a physical test at the same time that it asserts that it is not adopting a physical test.

Patent-eligible subject matter has been traditionally limited only by whether the subject matter is directed to a law of nature, a phenomenon of nature or an abstract idea. Other than these traditional categories of patent-ineligible subject matter, the courts have been consistent in holding that process steps are patentable despite the fact that they lack a physical limitation, such as a machine-or-transformation step.[8] Indeed, attempting to distinguish between physical and non-physical steps will lead to a futile effort in metaphysics and invite practitioners to 'game' the system.[9] Thus, the Federal

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[7] *In re Bilski,* 545 F.3d at 963.

[8] *See, e.g., Gottschalk v. Benson,* 409 U.S. 63 (1972); *Parker v. Flook,* 437 U.S. 584 (1978) and *Diamond v. Diehr,* 450 U.S. 175 (1981).

[9] *See, e.g., Arrhythmia Research Technology, Inc. v. Corazonix Corp.,* 958 F.2d 1053 (Fed. Cir. 1992), where the Federal Circuit found that the terms "determining" and "comparing" were physical process steps and that electrical signals were inherently physical and *In re Nuijten,* 500 F.3d 1346 (Fed. Cir. 2007), where the Federal Circuit determined that electrical signals, while physical, were too transitory to fall within one of the statutory categories for patentable subject matter. It is unclear why the "transitory" nature of a signal is problematic,

(Continued on following page)

Circuit erred in holding that a process must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing.

B. The Machine-Or-Transformation Test Does Not Properly Distinguish Between Patent-Eligible And Patent-Ineligible Subject Matter

There is quite a bit of patentable ground between a process that is not limited by a physical step, such as a machine-or-transformation step, and a process that is. The machine-or-transformation test, by requiring a physical limitation in the claims, classifies all physical processes as patent-eligible subject matter but misses much non-physical patent-eligible subject matter that is acceptable under this Court's precedent. Namely, the test fails to identify non-physical subject matter which is not a law of nature, natural phenomenon or an abstract idea. As an example, as *Amici* will discuss in section III(B) below, claim 13 of U.S. Patent No. 4,940,658 ("'658")

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since many physical phenomena, such as chemical processes, are equally transitory, but unquestionably patentable. *See also State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), where the transitory nature of the calculated net asset value was not a bar to patent eligibility. As far as "gaming" the system, a clever patent practitioner will be able to say the so-called "magic words" so that a claimed invention is drawn to some sort of a machine or has a physical transformation step. *See* Julie E. Cohen and Mark A. Lemley, *Patent Scope and Innovation in the Software Industry*, 89 Cal. L. Rev. 1 (2001).

patent claims non-physical subject matter which is not a law of nature, natural phenomenon or an abstract idea.

Thus, the machine-or-transformation test does not adequately distinguish between patent-eligible and patent-ineligible subject matter.

C. The Machine-Or-Transformation Test Is Inconsistent With 35 U.S.C. § 101 And This Court's Long-Standing Precedent

The Federal Circuit erred in *In re Bilski* by creating a new and amorphous "machine-or-transformation" test that is inconsistent with 35 U.S.C. § 101 and long-standing Supreme Court precedent. As noted in the dissenting opinions in *Bilski*, the majority's novel test raises more questions than it answers, and indeed creates significant confusion. The Federal Circuit's interpretation of 35 U.S.C. § 101 uprooted years of case law, which should only be done for the most compelling reasons. "Considerations of *stare decisis* have special force in the area of statutory interpretation, for here, unlike in the context of constitutional interpretation, the legislative power is implicated, and Congress remains free to alter what [the courts] have done." *Shepard v. United States*, 544 U.S. 13, 23 (2005). "Where, as here, Congress has not acted to modify the statute in the many years since *Diehr* and the decisions of [the Federal Circuit], the force of *stare decisis* is even stronger." *In re Bilski*, 545 F.3d at 993 (Newman, J., dissenting) (*citing Shepard,* 544 U.S. at 23). The Federal Circuit's majority decision in *Bilski* is based on a misguided and novel reading of selected Supreme Court quotations; it disrupts both settled precedent and long-standing expectations concerning intellectual property rights, and is bad public policy.

Recent Supreme Court precedent calls for judicial flexibility in carrying out the Constitutional and statutory mandates of the patent system. Indeed, the Supreme Court recently rejected rigid Federal Circuit precedent in *KSR Int'l Co. v. Teleflex, Inc.,* 550 U.S. 398 (2007), when it overruled the "teaching, suggestion, or motivation," or TSM, test for analyzing obviousness under 35 U.S.C. § 103. While recognizing that the TSM test was developed to "resolve the question of obviousness with more uniformity and consistency," the Supreme Court summarily rejected the overly-rigid rule as "contrary to §103 and [its] precedents." *Id.* at 407. Unfortunately, the machine-or-transformation test similarly seeks to achieve consistency and predictability by supplanting the broad and flexible Supreme Court precedent governing patentability under § 101 (*see Diehr*, 450 U.S. at 185; *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980); and *Benson*, 409 U.S. at 93), with a narrow and rigid test. As *KSR* demonstrates, such an effort to achieve predictability, even if well-intended, is not reason enough to disregard controlling precedent.

III. A PROPOSED FRAMEWORK FOR IDENTIFYING PATENT-ELIGIBLE SUBJECT MATTER

A. This Court Should Determine Whether A Law Of Nature, Natural Phenomenon Or Abstract Idea Is Claimed And Construe Those Terms In The Ordinary English Sense

Amici propose a framework that considers as a threshold step whether a fundamental principle (i.e., a law of nature, a phenomenon of nature or an abstract idea) is claimed. If not, the claimed subject matter describes a patent-eligible process. If a fundamental principle is claimed, the patent claim should be analyzed to determine if it entirely preempts the fundamental principle. Such a determination can take into account whether the claimed method involves a machine-or-transformation step, but not as the sole determinative test for patentability. For application of the test, the terms *law of nature*, *natural phenomenon* and *abstract idea* should be construed in the ordinary English sense as universal having a central role in scientific practice and as being fundamental.

As a threshold for the determination of whether patent-eligible subject matter is present, *Amici* propose an investigation of the ordinary English meaning of the words law of nature, natural phenomenon and abstract idea.[10] *Amici* would propose that the Court adopt a workable definition for each of those terms which could be rationally applied by practitioners.[11] Consistent with the Court's trend towards reading words in an ordinary English way,[12]

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[10] Courts have never determined what exactly is included within the terms "law of nature, natural phenomenon and abstract idea" by construing the boundaries of those terms to determine whether they do, in fact, have one of these fundamental principles before them (*see, e.g.*, *Funk Brothers Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948) (determining that bacterial qualities of non-inhibition were phenomena of nature); *Flook*, 437 U.S. at 595 (determining that a method of calculating is drawn to non-statutory subject matter); *Gottschalk*, 409 U.S. at 68 (holding that a method of binary conversion was so abstract as to not be patentable); *Diehr*, 450 U.S. at 191 (holding that a claim to a process for curing rubber which employed a mathematical equation did not only entail an abstract mathematical formula and thus was drawn to patentable subject matter). *Amici* believe that such an approach, a sort of " . . . know it when I see it . . . " approach (*see* Justice Potter Stewart's statement in his concurrence in *Jacobellis v. Ohio*, 378 U.S. 184 (1964) for example) has led to much confusion. *Amici* do note that some justices of the Supreme Court have cautioned against trying to define such concepts as a law of nature, natural phenomenon or abstract idea (*see, e.g.*, *Funk Brothers Seed Co.*, 333 U.S. at 133 (Frankfurter, J., concurring). But, we believe that a rational, perhaps flexible, definition would be the best way to make the process and analysis more meaningful.

[11] *Amici* realize that the Courts have also been disposed to consider thinking as patent ineligible. *Amici* believe the Court should also adopt a position that claim language should be construed, when possible, to avoid implicating the process of thinking. The proposal is set forth below.

[12] *See, e.g.*, *Perrin v. United States*, 444 U.S. 37, 42 (1979).

Amici propose that each of the terms "law of nature, natural phenomenon and abstract idea" should incorporate the following elements:

1. That they are universal as defined in terms of ordinary English and thus have a central role in scientific practice; and
2. That they are fundamental, as defined in terms of ordinary English.

For the terms "universal" and "fundamental," *Amici* would propose that the Court adopt the following definitions:

A. Universal:

Something which is an absolute or general concept regarded either as forming or having an absolute, mental or nominal existence; a universal proposition; a general term, notion or idea. (The Oxford English Dictionary (2d ed. 1989))

B. Fundamental:

Something which is a leading or primary principle, rule, law, or article which serves as the groundwork of a system; an essential part. (The Oxford English Dictionary (2d ed. 1989))

For the terms "law of nature", "phenomenon", and "abstract", we would propose the following definitions:

> C. Law of Nature:
>
> In the sciences of observation, a theoretical principle deduced from particular facts, applicable to a defined group or class of phenomena, and expressible by the statement that a particular phenomenon always occurs if certain conditions are present. (The Oxford English Dictionary (2d ed. 1989))
>
> D. Phenomenon:
>
> In scientific and general use, a thing that appears, or is perceived or observed; an individual fact, occurrence, or change as perceived by any of the senses, or by the mind; applied chiefly to fact or occurrence, the cause or explanation of which is in question. (The Oxford English Dictionary (2d ed. 1989))
>
> E. Abstract:
>
> Refers to something that is withdrawn or separated from material embodiment, from practice, or from particular examples. Thus, an abstract idea is an idea that is withdrawn or separated from material embodiment, from practice, or from particular examples. (The Oxford English Dictionary (2d ed. 1989))

Accordingly, consistent with this Court's precedent,[13] *Amici* would propose that the terms "law of nature," "natural phenomenon" and "abstract idea" should be defined as follows:

A. Law of Nature

A law of nature is, in the sciences of observation, a theoretical principle deduced from particular facts, applicable to a defined group or class of phenomena, and expressible by the statement that a particular phenomena always occurs if certain conditions are present. A law of nature has an absolute or general concept regarded either as forming or having an absolute, mental or nominal existence; a universal proposition; a general term, notion or idea. A law of nature is also a leading or primary principle, rule, law or article which serves as the groundwork of a system, an essential part.

B. Phenomenon of Nature

A phenomenon of nature appears, or is perceived or observed; an individual fact,

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[13] *See, e.g.*, *Gottschalk v. Benson,* 409 U.S. 63 (1972); *Parker v. Flook*, 437 U.S. 584 (1978); and *Diamond v. Diehr*, 450 U.S. 175 (1981), where this Court has consistently justified the exclusion of patent-ineligible categories on the supposition that they were fundamental principles, those containing a fundamental truth, an original cause, a motive, the basic tools of scientific research, part of the storehouse of knowledge available to all. Thus any set of working definitions should include these ideas.

> occurrence, or change as perceived by any of the senses, or by the mind; applied chiefly to fact or occurrence. A phenomenon of nature has an absolute or general concept regarded either as forming or having an absolute or nominal existence; a universal proposition. A phenomenon of nature is also a leading or primary principle which serves as the groundwork of a system, an essential part.
>
> C. Abstract Idea
>
> An abstract idea is an idea that is withdrawn or separated from material embodiment, from practice, or from particular examples. An abstract idea has an absolute or general concept regarded either as forming or having an absolute, mental or nominal existence; a universal proposition; a general term, notion or idea. An abstract idea is also a leading or primary principle which serves as the groundwork of a system, an essential part.

To determine whether claimed subject matter is patent eligible, *Amici* propose this test with definitions in mind:

1. As a threshold step, determine whether a fundamental principle (i.e., a law of nature, a phenomenon of nature or an abstract idea) is claimed. If not, the claimed subject matter describes a patent-eligible process.

2. If a fundamental principle is claimed, determine whether the patent claim

> entirely preempts the fundamental principle. The determination may take into account whether the claimed method involves a machine-or-transformation step. If the claim does not entirely preempt the fundamental principle, then it claims patent-eligible subject matter; if the claim does entirely preempt the fundamental principle, then it does not claim patent-eligible subject matter.

With this test and these definitions in mind, *Amici* now turn to a representative diagnostic claim, claim 13 of U.S. Patent No. 4,940,658.

B. Diagnostic Claims Drawn To Methods Of Predicting Response In A Patient Are Patent-Eligible Because They Do Not Describe A Fundamental Principle

Amici will focus on how the machine-or-transformation test could affect personalized medicine companies, and claim 13 of U.S. Patent No. 4,940,658, the claim that was the subject matter of *Laboratory Corp. of Am. Holdings v. Metabolite Labs. Inc.*, 548 U.S. 124 (2006), provides an excellent vehicle to exemplify application of the proposed framework.[14] The claim is directed to a non-physical

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[14] Claim 13 recites: "A method for detecting a deficiency of cobalamin or folate in warm-blooded animals comprising the steps of: assaying a body fluid for an elevated level of total

(Continued on following page)

process, but non-physical processes are patentable, as well.[15]

So, as a first step, the Court should consider whether the process of correlating is drawn to a law of nature, a natural phenomenon or abstract idea, as *Amici* have defined these terms. Under the proposed test, the ordinary English meaning of the words "natural phenomenon" requires that the claimed assay be universal and have a central role in scientific practice. The scientific correlation of homocysteine levels with a deficiency of cobalamin describes a very narrow biological correlation, certainly not something universal and central to scientific practice.[16] In the human body, many biological components, genes, proteins, tissues and even entire organs, work together through very complicated processes. Although the processes are connected, they are very different, and, indeed, a

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homocysteine; and correlating an elevated level of total homocysteine in said body fluid with a deficiency of cobalimin or folate."

[15] One could argue that the "assaying" step, among others, does indeed require some sort of a physical step and requires a machine, as a result. *Amicus* have chosen to focus on the issue at hand, namely the "correlating" aspect of claim 13, and assume that the step does not require an assay step.

[16] Were one to analogize claim 13 to the *Benson* and *Flook* claims, the difference would be that the claims in *Benson* and *Flook* were, according to the Court, to the algorithm, *per se*. Claim 13, on the other hand, is drawn to a very narrow biological correlation. In any case, *Amici* would urge the Court to use extreme caution in completely analogizing biological claims to algorithm claims.

single disease or disorder can often be associated with many different biomarkers in many different biological pathways. With so many different possible markers, even for the same disease, a patent monopoly on any one marker would not preclude scientists from discovering other pathways.

Indeed, the patent monopoly provided by claim 13 (or any claimed biological correlation) would not stifle innovation but would rather motivate others to seek out similar correlations, perhaps even in related biological pathways. Thus, claim 13 would not block the basic tools of research but would foster research. Similarly, in the specification of the '658 patent, the diagnostic process is explained in great detail, including how the claimed correlation would be applied to specific testing subjects, each of these details show that the correlation is not universal and central to the scientific process.

Under the proposed test, the ordinary English meaning of the words "natural phenomenon" require that the claimed assay additionally be fundamental, thus a leading or primary principle, rule, law or article which serves as the groundwork of a system, i.e. an essential part. The correlation exists in some human beings, perhaps as a product of evolution, and as such, it could have been different. And, if it could have been different, as evolution could have taken a different path, it does not describe a leading or primary principle, just an artifact of evolution. This is key: the fact that it could have been different demonstrates that it is not the groundwork for a system or an essential part. As a result, claim 13, as a correlation is not a fundamental principle and thus does describe patent-eligible subject matter.[17]

In contrast, examples such as $E=mc^2$, Newton's law of gravity, and phenomena of nature such as water freezing or the aurora borealis would certainly constitute laws of nature and natural phenomena in the ordinary English meaning of the word. They each describe an absolute or general concept regarded as forming or having an absolute existence, and they are each universal and central to scientific practice. Each of these phenomena, and the principles behind them, could also be considered as the groundwork of a system, essential and fundamental, in other words. Each of these principles, unlike claim 13 in *Lab. Corp. of Am. Holdings*, very clearly fall into the category of a fundamental principle and would be the sort of patent-ineligible subject matter that would constitute the basic tools of research, the common knowledge of all.

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[17] *Amici* believe this argument can be extended to the subject matter of all diagnostic claims. As examples, please see the claims in U.S. Patent No. 6,680,302 drawn to methods of optimizing therapeutic efficiency, the subject of *Prometheus Labs. v. Mayo Collaborative Servs.*, 2008 U.S. Dist. LEXIS 25062 (S.D. Cal. Mar. 28, 2008), as well as the claims in U.S. Patent No. 5,723,283, claims drawn to a method of determining whether an immunization schedule affects the incidence or severity of a chronic immune-mediated disorder, the subject matter of *Classen Immunotherapies, Inc. v. Biogen IDEC*, 381 F. Supp. 2d 452 (D. Md. 2005), *aff'd*, 2008 U.S. App. LEXIS 25661 (Fed. Cir. Dec. 19, 2008).

As an interesting point of contrast, since almost anything and everything that is a result of nature could be viewed as a natural phenomenon, this would mean that the statutory proscriptions related to patentability would apply to everything. Although Justice Frankfurter was noting that an attempt to define a law of nature would be futile, in *Funk Brothers Seed Co.*, 333 U.S. at 135, his concurring opinion stated:

> Everything that happens may be deemed "the work of nature," and any patentable composite mixture exemplifies in its properties the "laws of nature."

While *Amici* would agree with this statement on its face, *Amici* would note that, since almost every process is impacted by or based upon a law of nature, arguments can be drawn for challenging any patent based upon those grounds. The end result of this reasoning is that nothing, or everything, is patentable, and both results defy logic.

Amici urge the Court to adopt the two part test setting forth the ordinary English definitions set forth above. As applied according to that test and those definitions, claim 13 of the '658 patent are not drawn to fundamental principles and describe patent-eligible subject matter.

IV. THE MACHINE-OR-TRANSFORMATION TEST THREATENS TO STIFLE INNOVATION IN PERSONALIZED MEDICINE

A. Personalized Medicine Is A Growing Field With A Tremendous Potential To Help Patients

Personalized medicine refers to the tailoring of medical treatment to the individualized characteristics of each patient. The technology allows physicians to make treatment decisions based on molecular markers that signal the presence or risk of developing a disease, potential outcome and likelihood that the patient will respond to particular therapies. Diagnostic correlations used to identify the most effective treatment options for an individual patient are critical to personalized medicine.

The use of diagnostic correlations to select the optimal therapy for an individual patient translates to improved and more cost-efficient health care for all. There are two important issues in selecting a treatment: efficacy and risk of side effects. On average, a commercial drug works for only 50% of the target population.[18] Further, every drug and biological therapeutic has undesirable side effects, some of which can be predicted based on a patient's drug metabolism signature. Published estimates show that approximately 5.3% of hospital admissions are associated with adverse drug reactions (ADRs).[19] Products marketed by personalized medicine companies empower physicians with the ability to treat patients with drugs that target the disease while minimizing undesirable side effects. Personalized medicine products thus spare the patients from suffering through ineffective treatment regimes, increase the probability of positive outcome and decrease the health care costs.

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[18] B. Spear, et al., Clinical application of pharmacogenomics, Trends Mol. Med. 7(5):201-204 (2001).

The Oncotype DX® breast cancer assay, product of research conducted by Genomic Health, can predict the *likelihood* that a patient with early-stage, ER+ breast cancer will experience a recurrence of breast cancer within 10 years and whether that patient will benefit from adding chemotherapy to his/her hormonal therapy. The test is based on mRNA levels of 21 genes, and provides a continuous Recurrence Score® (RS) result for each patient that places them in a low, intermediate or high risk category. A patient with a low RS will not significantly benefit from adding chemotherapy, and may be treated with hormonal therapy alone. Considering that about 20% of patients are in this category, this represents a substantial savings (approximately $1930.00 per patient) to the health care system and benefit to those patients who are spared the unnecessary disruption and toxic effects of chemotherapy. On the other hand, a high RS signals that chemotherapy should be added to the patient's regimen. Used in concert with other clinical factors, the Oncotype DX® assay can aid physicians and patients in making personalized and cost-efficient treatment decisions.

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[19] C. Kongkaew, et al., Hospital admissions associated with adverse drug reactions, Ann Pharmacother 42(7):1017-1025 (2008).

The selection and validation of the 21 genes, from potentially thousands of genes, to use in this test and development of RS from the expression levels was the culmination of thousands of hours of research by highly trained scientists at Genomic Health. The selection of 21 genes whose mRNA should be monitored was not the discovery of some mere principle of nature, rather it was the identification that certain arbitrary genes happen to be associated with the risk of cancer. HERmark® is a proprietary diagnostic of Monogram Biosciences that accurately quantifies HER2 total protein expression in patients with breast cancer. Preliminary data from three cohorts of Herceptin-treated patients with metastatic breast cancer who were identified as "HER2 positive" by conventional assays suggesting that HERmark® can identify patients who are likely to respond to trastuzumab with greater precision than currently available tests. To date, thousands of hours of research have been involved in developing HERmark®.

The success of genomics in breast cancer is being repeated in other cancers, as well as in other fields. For example, about 40% of patients with metastatic colon cancer are unlikely to respond to two key therapies: cetuximab and panitumumab, because these patients have certain KRAS gene mutations.

Current practice guidelines recommend that only patients with the normal KRAS gene sequence be treated with chemotherapy, resulting in potential savings of approximately $604 million annually if all patients are first stratified using the KRAS molecular diagnostic.[20]

A patient's genetic profile now allows physicians to determine whether a patient will respond to a particular therapy, and whether the risk of disease for that patient justifies the expense and burden of particular therapy. This information has the potential to increase patient adherence to treatment regimens, decrease costs and failure rates of drug clinical trials by focusing on appropriate sub-classifications of patients. It is no wonder, then, that the FDA has recognized and encouraged the development of personalized medicine pharmacogenic information, and nearly every major pharmaceutical project is incorporating information on genetic variation and effects on the safety and effectiveness of the candidate drug.[21] The importance of supporting further development of this technology has also been recognized by the President's Council on Science and Technology (*2008 Report on Priorities for Personalized*

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[20] National Comprehensive Cancer Network Guidelines in Oncology, Colon Cancer, v.2.2009 (available online at http://www.nccn.org/professionals/physician_gls/PDF/colon.pdf).

[21] *See, e.g.*, Guidance for Industry on Pharmacogenomic Data Submissions (2005); Drug-Diagnostic Co-Development Concept Paper (2005); 21 § C.F.R. 201.57.

Medicine), HHS (*Personalized Health Care Initiative*,), the Legislature (*Genomics and Personalized Medicine Act of 2006* (Obama, S. 3822)) and rules and comments put forth by many other professional, state and federal health care organizations. In her written testimony during Senate confirmation hearings, HHS Secretary Kathleen Sebelius made the following statement:

> As a result of these contributions to improvement in the quality of care, personalized medicine represents a key strategy on healthcare reform. The potential application of this new knowledge, especially when supported through the use of health information technology in the patient care setting, presents the opportunity for transformational change.[22]

In sum, personalized medicine offers a model for efficient and high quality health care.

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[22] Katheen Sebelius, written testimony given during Senate confirmation hearings, April 2, 2009.

B. Because The Machine-Or-Transformation Test Endangers Funding For Personalized Medicine Companies, It Will Undermine Personalized Medicine Companies, Stifle Development And Ultimately Harm Patients

In his dissent in *Lab. Corp. of Am. Holdings*, Judge Rader warns us of the consequences of endangering funding for personalized medicine. He characterized claim 13 of the '658 patent as patent-eligible and lamented that denying patent protection for such a claim will undermine and discourage future research for personalized medicine companies. According to Judge Rader:

> . . . this Court inadvertently advises investors that they should divert their unprotectable investments away from discovery of "scientific relationships" within the body that diagnose breast cancer or Lou Gehrig's disease . . .

Given the long and expensive research, development and commercialization cycles and relatively limited resources of most personalized medicine companies, the patent system is essential to protect and foster innovation that, in turn, attracts financial investors. Denying valuable patent protection for personalized medicine companies will surely advise investors that they should divert their unprotectable investments away from personalized medicine and, as a result, slow the progress of science and harm the interests of human patients.

A strict requirement that a process be tied to a particular machine or transform an article could exclude much of the technology that drives today's information and knowledge-based economy from patent protection, and prospectively hinder innovation in fields of biotechnology, health sciences and personalized medicine. The biotechnology industry touches upon many essential aspects of the U.S. economy, including pharmaceutical therapies, medical diagnostics, agricultures and industrial processes. The biotechnology industry has registered a fast growth since the early 1990s. For instance, their revenues increased from $8 billion in 1992 to $39.2 billion in 2003. The job market forecast of biological technicians is expected to grow by 28.2 percent between 2004 and 2014, and that of biological scientists is projected to grow by 17.0 percent. In the health care sector, the biotechnology industry has more than 370 therapeutic products currently in clinical trials being studied to treat more than 200 diseases. Because diagnostic correlating claims would not be patentable with a strictly machine-or-transformation step, the application of *Bilski's* test threatens to undermine the development of personalized medicine, stem the progress of science and adversely affect the health and quality of life of patients.

Personalized medicine helps patients, and holds tremendous potential for improving their lives by its ability to more precisely identify potential diseases before they arise and select treatment options that are specific to the individual. The key to this capability is the discovery not of some "scientific truth" or "law of nature" or even "natural phenomena." Rather, it is the discovery, like many medical discoveries before now, of certain relationships – "correlations." The discovery of the correlations should be patentable subject matter in order to encourage and justify investments in the fledgling industry.

Patents are essential to ensure further research and development in personalized medicine and to encourage and protect investment. Patent claims directed to diagnostic correlations are the key to progressing these goals. Patents and the protection provided by them foster innovation as way leads on to way, one discovery leading on to another, and as other personalized medicine companies find other ways to help other patients. Perhaps we will be telling this story ages and ages hence: that we helped small personalized medicine companies improve ourselves. And that has made all the difference.

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CONCLUSION

Requiring, as does the Federal Circuit in *Bilski*, that all claims recite a "physical" step, such as a machine or physical transformation step, jeopardizes the future of research in personalized medicine by making many biologically-based inventions unpatentable under § 101. There is no support for the machine-or-transformation test or the idea that only physical processes should be patentable, and *Amici* urge the Court to hold that all processes are patent-eligible. *Amici* urge the Court to adopt a rational framework for determining patent-eligible subject matter that accords with the existing law, one that involves determining, as a threshold step, whether a fundamental principle (i.e., a law of nature, a phenomenon of nature, or an abstract idea) is claimed. The test should be simple and elegant and the terms *law of nature*, *natural phenomena* and *abstract idea* should be construed in an ordinary English sense as universal and having a central role in scientific practice and also as being fundamental. Once the Court sets forth the test, *Amici* believe the Court will determine that claims to the discovered diagnostic corrections are patent-eligible, such as claim 13 from the '658 patent.

Patents to diagnostic correlations are essential to personalized medicine companies to attract the funding necessary to bring new diagnostics to market. Without adequate patent protection, personalized medicine companies will suffer, new research will dry up and new treatments will not become available to patients.

Respectfully submitted,

NARINDER S. BANAIT
Counsel of Record
FENWICK & WEST LLP
801 California Street
Mountain View, CA 94041
(650) 988-8500

Counsel for Amici Curiae

AMICUS
CURIAE
BRIEF

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Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF *AMICUS CURIAE* NOVARTIS CORPORATION SUPPORTING PETITIONERS

EVAN A. YOUNG
BAKER BOTTS L.L.P.
1500 San Jacinto Center
98 San Jacinto Boulevard
Austin, Texas 78701-4078
(512) 322-2500

JENNIFER GORDON
SCOTT B. FAMILANT
STEVEN P. LENDARIS
JENNIFER COZEOLINO
BAKER BOTTS L.L.P.
30 Rockefeller Center
New York, NY 10112
(212) 408-2500

JEFFREY A. LAMKEN
Counsel of Record
BAKER BOTTS L.L.P.
1299 Pennsylvania Ave., NW
Washington, D.C. 20004-2400
(202) 639-7700

Counsel for Amicus Curiae Novartis Corporation

WILSON-EPES PRINTING CO., INC. – (202) 789-0096 – WASHINGTON, D.C. 20002

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QUESTIONS PRESENTED

1. Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

2. Whether the Federal Circuit's "machine-or-transformation" test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273.

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BRIEF OF *AMICUS CURIAE* NOVARTIS CORPORATION SUPPORTING PETITIONERS

INTEREST OF *AMICUS CURIAE*

Novartis Corporation, through its U.S. affiliates (hereinafter collectively "Novartis"), provides healthcare solutions that address the evolving needs of patients and societies. Focused solely on healthcare, Novartis offers a diversified portfolio to best meet patient and social needs: innovative medicines, cost-saving generic pharmaceuticals, preventive vaccines, diagnostic tools, and consumer health products. Novartis is the only company that provides innovative benefits to patients in all of these areas. Novartis relies on the patent system to protect its many innovations in patient care. Without the promise of exclusive rights in validly patented subject matter, the investment incentive for the research and development needed to discover innovative pharmaceutical and diagnostic products is greatly diminished.

Novartis has great interest in this case because the Federal Circuit's rigid and putatively exclusive machine-or-transformation test, as articulated in the decision below, potentially threatens to remove from patent-eligibility under 35 U.S.C. § 101 the types of inventive processes in which Novartis has heavily invested and continues to pursue at great cost, including innovations relating to personalized medicine. Personalized medicine not only provides for more effectively and economically marshaled healthcare resources but also—and more importantly—improves patients' well-being and, indeed, saves lives. Affirmance of the Federal Circuit's approach for determining process patent-eligibility could have an immediate, negative impact on personalized health care, an area of great importance to patients and to Novartis.[1]

SUMMARY OF ARGUMENT

This Court should reject the Federal Circuit's one-size-fits-all test for assessing the patent-eligibility of process claims. That court held that § 101 of the Patent

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[1] Pursuant to this Court's Rule 37.6, *amicus* affirm that no counsel for a party authored this brief in whole or in part, that no such counsel or party made a monetary contribution intended to fund the preparation or submission of this brief, and that no person or persons other than *amicus* and its counsel made such a monetary contribution. Both parties have consented to the filing of this brief. The parties' letters so consenting have been filed with the Clerk's office.

Act, 35 U.S.C. § 101, permits a process to be patented only if "(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing." Pet. App. 12a. Although the decision below evaluated a business-method claim, its machine-or-transformation test appears intended to apply to *any* process claim. *Id.* at 15a-16a. In that respect, the test overreaches and unduly restricts § 101's textually broad scope.

The difficulty of reconciling the Federal Circuit's test with process claims arising in the context of the biological sciences—a field that differs greatly from the transaction hedging the Federal Circuit had before it—is strong evidence that the Federal Circuit went too far. This Court recently had an opportunity to consider the scope of patent-eligibility under § 101 in a biological context in *Lab. Corp. of Am. Holdings* v. *Metabolite Labs., Inc.*, 548 U.S. 124 (2006). But the Court was unable to reach the merits because the issue was not properly preserved for its review. In his dissent, Justice Breyer (joined by Justices Stevens and Souter) stated that he would have reached the question presented and would have held that the patent claim at issue (a process claim for detecting a vitamin deficiency) amounted to "an unpatentable 'natural phenomenon.'" *Id.* at 132-34, 138 (Breyer, J., dissenting from dismissal of certiorari).

Although the decision below and the dissenting views expressed in *Lab. Corp.* spring from legitimate concerns, their proposed solutions, which are based on faulty premises, would unduly constrict the scope of § 101. Both opinions unnecessarily raise uncertainties about the patent-eligibility of diagnostic methods that are based on the detection or measuring of "biomarkers," such as DNA sequences or other biological substances that are indicative of a host having or being predisposed to a certain disease or condition. This case provides an opportunity to ensure that the scope of § 101 is properly calibrated.

A. The *Lab. Corp.* dissent and the machine-or-transformation test as applied by the court below focus on § 101 without giving full effect to its text or how it fits into the overall scheme of the Patent Act. Although § 101's scope is not boundless, this Court has recognized that it is a "dynamic provision designed to encompass new and unforeseen inventions." See *J.E.M. Ag. Supply, Inc.* v. *Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124, 135 (2001).

There is no reason why process claims based on detecting or measuring biomarkers should fall outside § 101's scope. Section 101 guarantees that "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." The only explicit limitation on that expansive statutory language is the exclusion of processes that preempt laws of nature, natural phenomena, or abstract ideas.[2] Processes *applying* the foregoing, however, do not preempt them, and hence are eligible for patent protection under § 101.

Giving § 101 its ordinary and expansive meaning does not minimize the legitimate and important concerns underlying the *Lab. Corp.* dissent—that abusive or otherwise meritless patent claims not be allowed to impede the proper functioning of the patent system as a whole or to deprive society of free access to knowledge that is not attributable to an inventor. But this important policing function is ordinarily not the job of § 101; it is instead, as § 101 itself indicates, the work of other "conditions and requirements" of the Patent Act. Sections 102, 103, and 112 are particularly potent statutory safeguards against claims unworthy of protection, *even if* those claims fall within the capacious scope of § 101.

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[2] Although the "laws of nature" and "natural phenomena" exceptions are technically separate, they are analytically indistinct for purposes of this brief. When referring to the conceptual space occupied by both the "laws of nature" and "natural phenomena" exceptions, this brief will refer for convenience to "the laws of nature."

B. Diagnostic-process claims properly fall within § 101's protection. They are integral and inseparable ingredients in the larger process of managing and treating disease. Such claims are at the front-end of the healing process. An extraordinary investment of intellectual and financial resources allows scientists to identify biomarkers, which in turn have created a new era of "personalized medicine," *i.e.*, individualized patient care tailored to a patient's unique biological profile, including his or her genetic makeup. Innovations in personalized medicine are thus largely based on the discovery of natural laws, specifically that biomarkers are, for example, predictive of disease or of responsiveness to specific drugs.

The dissent in *Lab. Corp.* expressed doubts about the patent-eligibility of diagnostic-process claims that, without reciting an underlying transformative event, appear to cover data gathering and a natural correlation.[3] The dissent's view that such claims are essentially and impermissibly directed to a law of nature *itself* is incorrect. That error arose because the assaying step of the claim at issue in *Lab. Corp.* was never fully analyzed below, if at all, in the § 101 context. Claims such as those at issue in *Lab. Corp.* are directed to a practical *application* of a law of nature. They require the testing of a patient sample (an act of human intervention) for a particular biomarker, which, if present, signifies a corresponding disease or a predisposition to develop it in the future. Such test results, in turn, open the door for that patient to be treated in an individualized fashion. Consequently, diagnostic-process claims are directed to perhaps the most "useful" endeavor of all—directly enhancing the quality of, or even sustaining the very existence of, human life.

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[3] For instance, a diagnostic claim might be phrased "a method for diagnosing disease X in a human patient comprising (a) detecting in a sample taken from such patient the presence of sequence Y in gene Z, wherein the presence of sequence Y in gene Z indicates the likelihood of developing disease X; and (b) diagnosing whether the patient will develop disease X based on the result of step (a)."

Importantly, such claims do not "preempt" the laws of biology, physics, or chemistry as they manifest themselves in nature, as the *Lab. Corp.* dissent suggests. The two steps of the claim (*i.e.*, "assaying" and "correlating") must be practiced for there to be an act of infringement. Hence, an individual who possesses a biomarker indicative of a particular condition does not infringe such claims by living and breathing. Neither do such claims stop anyone, including a patient's own physician, from simply thinking about possible medical predispositions in light of the presence or absence of a biomarker.

Similarly, the Federal Circuit's approach in the decision below has the potential to deny protection to diagnostic-process claims to the extent they neither tie the method of detecting a given biomarker to a particular machine nor recite a series of transformative steps that enable that detection. But the development of such diagnostic methods is the fruit of tremendous intellectual and financial exertion, and the resulting methods provide both increasing and extraordinary benefits to patients. The factual and policy considerations surrounding the patent-worthiness of claims to life-saving diagnostics are simply too distinct and complex to foreclose their ability to qualify for patent-eligibility on considerations other than whether they implicate machines or transformations. If the machine-or-transformation test were to deny such diagnostic methods the opportunity for patent protection, the incentive for conducting such costly and useful research would be dramatically diminished.

C. Because diagnostic-process claims are proper under § 101, this Court should make clear that it is not endorsing the machine-or-transformation test as the definitive test for assessing the patent-eligibility of all process claims. But even if the Court were to adopt the machine-or-transformation test in some fashion, it should recognize that diagnostic-process claims are entirely unlike the business-method claims at issue in this case. A bare, descriptive mathematical formula addressing commodity-price hedging may be susceptible to the § 101 limitation on patenting "abstractions." But diagnostic-process claims such as those involving biomarkers implicate the very different limitation on claiming "laws of nature." Hence whatever merit there may be to using the machine-or-transformation test as one means to assess a process claim's patent-eligibility, this Court should make clear that it is not requiring satisfaction of that test as the only test for a diagnostic-process claim to be patent-eligible; that narrow question should at the very least be reserved for a case that squarely involves such patent claims and raises such issues.

ARGUMENT

THE FEDERAL CIRCUIT'S MACHINE-OR-TRANSFORMATION TEST UNDULY NARROWS THE SCOPE OF PATENT-ELIGIBILITY FOR PROCESS CLAIMS UNDER § 101

This case asks one of the most fundamental questions in patent law: When is a "process" eligible for patent protection under 35 U.S.C. § 101? In the opinion below, the Federal Circuit ruled that any process claim is patent-eligible only if "(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing." Pet. App. 12a. Three years ago, this Court considered a similar question in *Lab. Corp. of*

Am. Holdings v. *Metabolite Labs., Inc.*, 548 U.S. 124 (2006). Because the Court ultimately concluded that the question had not been properly preserved, it declined to address it. In dissent, Justice Breyer (joined by Justices Stevens and Souter) urged that the Court should have answered the question, and opined that the patent claim at issue—a process for detecting a vitamin deficiency—was "an unpatentable 'natural phenomenon.'" *Id.* at 138 (Breyer, J., dissenting from dismissal of certiorari).

The two opinions in those two cases chart different courses and involve different types of process claims (a business-method claim and a diagnostic-process claim). But both endanger the ability of the pharmaceutical and biotechnology industries, which are revolutionizing the nature of health care, to patent diagnostic processes emerging from intensive and costly research and development. Denying patents for such claims would contravene the text and purposes of the Patent Act. This case provides the Court an opportunity to rectify the erroneous approaches suggested by the decision below and the dissenting opinion in *Lab. Corp.*

A. The Text and Structure of the Patent Act Reflect § 101's Broad Scope as Well as the Counter-Balance Provided by Other Sections of the Act

Any consideration of the scope of § 101 must "begin[] with the plain language of the statute." *Jimenez* v. *Quarterman*, 129 S. Ct. 681, 685 (2009). Section 101 provides that "[w]hoever *invents* or *discovers* any new and useful *process*, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." 35 U.S.C. § 101 (emphasis added). "Process" is defined as "process, art, or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material." *Id.*

§ 100(b). The Federal Circuit, by pronouncing that the machine-or-transformation test is the sole prism through which a process claim's compliance with § 101 should be judged, failed to respect the capacious statutory standard established by § 101's text.

Section 101 identifies four independent classes of patent claims that are eligible for protection. So long as it is "new and useful," any "process," "machine," "manufacture," or "composition of matter" can be the subject a patent claim. The court below, by adopting the machine-or-transformation test, adds a requirement that makes qualifying a process claim under § 101, in comparison to the other three recognized classes of patent claims, more onerous. Nothing in the text of § 101, however, requires that a process claim's patent-eligibility should turn on its having a nexus to a machine or transformation. To the contrary, § 101 by its terms makes a new and useful "process" *or* "machine" *or* "manufacture" *or* "composition of matter" potentially patentable subject matter; nowhere does it limit patent-eligibility for processes to those that are "tied" to a machine or transformation of matter.

Moreover, imposing such a requirement is antithetical to § 101's intended reach. The machine-or-transformation test could, for instance, be *one* way of establishing that a process *is* patent-eligible. The Federal Circuit was therefore correct to observe that any "claimed process is surely patent-eligible under § 101" if it satisfies that test. Pet. App. 12a. But the court erred by making it the *exclusive* test applicable to *all types* of process claims—a *sine qua non* for process claims to be patentable subject matter. See *id.* at 15a-16a. In doing so, that court failed to give proper effect to, and unduly constricted, § 101.

This Court, by contrast, has repeatedly acknowledged § 101's breadth. For example, the Court has held that it was Congress's intent that the Patent Act authorize the patenting of "anything under the sun that is made by man." *Diamond* v. *Diehr*, 450 U.S. 175, 182 (1981) (citation omitted). This broad perspective on § 101 has been the underlying basis for this Court's findings of patent-eligibility for a diverse array of subject matter, ranging from a directional antenna system in which the wire arrangement was determined by the logical application of a mathematical formula, see *Mackay Radio & Telegraph Co.* v. *Radio Corp. of Am.*, 306 U.S. 86 (1939), to organisms genetically engineered to break down crude oil, see *Diamond* v. *Chakrabarty*, 447 U.S. 303 (1980). Such a perspective recognizes that the text of § 101 is broadly inclusive. The only restrictions on that broad understanding of § 101 are the prohibitions against claiming "laws of nature. natural phenomena, and abstract ideas." *Diehr*, 450 U.S. at 185.

Even those exclusions have their limitations, as process claims involving such laws, phenomena, or ideas are patent-eligible if the process is a new and useful *application* of those laws, phenomena, or ideas. *Id.* at 187. Other decisions by this Court make the same point: "'He who discovers a hitherto unknown phenomenon of nature has no claim to a monopoly *of it* which the law recognizes. If there is to be invention from such a discovery, it must come from the *application* of the law of nature to a new and useful end.'" *Gottschalk* v. *Benson*, 409 U.S. 63, 67 (1972) (quoting *Funk Bros. Seed Co.* v. *Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948) (emphasis added)). This Court's precedents thus establish a bright-line test under which one may not preempt a law of nature *itself*, but may patent an *application* of it for "new and useful" ends. This should not be viewed as an unusual balance to strike; virtually any useful patent claim must ultimately rely on laws of nature to generate worthwhile results. As articulated in more detail in Section B, *infra*, diagnostic-process claims like the one at issue in *Lab. Corp.* are not directed to a law of nature itself, but to a practical application of a law, namely the use of a natural correlation to make a diagnosis. Hence they do not offend § 101.

This does not minimize or trivialize the legitimate and important concerns expressed, in particular, in the *Lab. Corp.* dissent. Those concerns underscore the necessity of having proper safeguards to weed out abusive or otherwise meritless patents. If "anything under the sun" can be patented, that overabundance can create genuine inefficiencies and unfairness. "[S]ometimes *too much* patent protection can impede rather than 'promote the Progress of Science and useful Arts,' the constitutional objective of patent and copyright protection." *Lab. Corp.*, 548 U.S. at 126-27 (Breyer, J., dissenting) (emphasis in original). One can agree with this concern while disputing how best to deal with it. Section 101 may appear to be unduly embracive, but it bears emphasis that it is, by its own terms, not the final hurdle a claim must clear before it can be patented. Rather, patentability ultimately turns on meeting "the conditions and requirements of" the rest of the Patent Act. 35 U.S.C. § 101.

Those "conditions and requirements" appear principally in §§ 102, 103, and 112 of the Patent Act. For example, §§ 102 and 103 preclude claims from covering subject matter that is anticipated by or obvious in view of the art. See, *e.g.*, *In re Cruciferous Sprout Litig.*, 301 F.3d 1343, 1345, 1352 (Fed. Cir. 2002) (claims to growing sprouts to reduce the level of carcinogens and, in turn, the risk of developing cancer in animals that consume them were anticipated; the carcinogen-lowering potential of sprouts are "inherent properties * * * put there by nature" such that the patentee had "not claimed anything that is new"); *Schering Corp.* v. *Geneva Pharms., Inc.*, 339 F.3d 1373, 1382 (Fed. Cir. 2003) (method of treating hay-fever with a metabolite of loratadine was inherently anticipated because loratadine, a prior art therapy, inherently converts to the metabolite upon ingestion); *In re O'Farrell*, 853 F.2d 894, 904 (Fed. Cir. 1988) (producing the claimed genus of proteins would have been obvious in view of the prior art). Indeed, § 102 provides an added level of protection against claims directed to a law of nature itself because such a law would inherently be within the art and hence anticipate such claims. See *EMI Group N. Am., Inc.* v. *Cypress Semiconductor Corp.*, 268 F.3d 1342, 1351 (Fed. Cir. 2001) (citing *Funk Bros. Seed*, 333 U.S. at 130).

Section 112 provides further protection. It ensures that claims are properly supported by a specification that describes their subject matter in a sufficiently clear and detailed fashion that they can be made and used. See, *e.g.*, *Regents of the Univ. of California* v. *Eli Lilly & Co.*, 119 F.3d 1559, 1567 (Fed. Cir. 1997) (disclosure of the genetic sequence for rat insulin gene did not entitle the patentee to generically claim mammalian or vertebrate insulin genes or the human insulin gene); *In re Fisher*, 421 F.3d 1365, 1367 (Fed. Cir. 2005) (claims to purified nucleic acid sequences that encode proteins and protein fragments in maize plants were not enabled; "the claimed invention lacks a specific and substantial utility and * * * the * * * application does not enable one of ordinary skill in the art to use the invention").[4]

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[4] See also *KSR Int'l Co.* v. *Teleflex Inc.*, 550 U.S. 398 (2007) (expanding the circumstances under which claims can be deemed obvious); *Bonito Boats, Inc.* v. *Thunder Craft Boats, Inc.*, 489 U.S. 141, 151 (1989) ("Both the novelty and the nonobviousness requirements of federal patent law are grounded in the notion that concepts within the public grasp, or those so obvious they readily could be, are the tools of creation available to all."); *O'Reilly* v. *Morse*, 56 U.S. (15 How.) 62, 119-20 (1853) (patent specification's description did not adequately support claims generically directed to using electro-

As the foregoing examples make clear, the Patent Act strikes a balance that makes frequent recourse to § 101 unwarranted. Consequently, there was little reason for the decision below to impose a restrictive construction on that provision by requiring processes to have a relationship to a machine or to the transformation of matter. To the contrary, that requirement is incompatible with the broad scope of § 101 that this Court has long recognized and that its text commands. To the extent the *Lab. Corp.* dissent can be construed as endorsing that test as the only way to judge a diagnostic-process claim's compliance with § 101, see 548 U.S. at 136 (Breyer, J., dissenting), it too suffers from the same fundamental defect.

To be sure, § 101 does provide a gate-keeping function that would be triggered where the claim at issue attempts to patent nothing more than a "natural phenomenon." See *Lab. Corp.*, 548 U.S. at 137-38 (Breyer, J., dissenting). But as shown in Section B, *infra*, diagnostic-process claims like the one in *Lab. Corp.* properly fall within § 101's scope.

B. Diagnostic-Process Claims Merit Protection Under § 101 Because They Are Applications of "Laws of Nature"

Viewing a claim to a diagnostic process as nothing more than a claim to the discovery of a law of nature, as the dissent did in *Lab. Corp.*, is analytically flawed. That view ignores expressly-recited claim steps and wholly misunderstands the nature and import of such process claims. As explained below, the nature of the subject-matter covered by diagnostic-process claims makes clear

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magnetism to print characters at a distance). There is no doubt that the principles articulated in this Court's patent law precedent, while developed outside the biological context, are fully capable of application in that context, and that diagnostic-process claims—like any other claim—are subject to scrutiny under §§ 102, 103, and 112.

that such revolutionary, 21st century subject matter is properly protected under § 101 and is not, as the *Lab. Corp.* dissent asserted, excluded from protection as an improper preemption of "laws of nature."

1. *The Ability to Detect or Measure Biomarkers Makes Personalized Medicine Possible*

Advancements in human genetic research have exploded in the 28 years since this Court last considered the scope of patent-eligibility for processes under § 101 in *Diehr.* The Human Genome Project—the first complete sequencing of the entire human genome—is perhaps the most prominent example; it has captured the public's imagination in showing how far science has moved. By providing researchers with a detailed map of the genes on all 23 human chromosomes, the Human Genome Project has accelerated the identification of relationships between specific genes and diseases. Products encoded by genes sequenced under the Human Genome Project have complex interrelationships; teasing out those relationships, and identifying malfunctions in these gene products, particularly those that cause diseases, has only just begun to produce improved medical treatments. Finding those relationships provides doctors with unprecedented tools for the treatment and prevention of disease. Indeed, the identification of those relationships will allow our healthcare system to shift from reaction to prevention. Simple genetic tests have the potential to flag disease predisposition long before any symptoms occur, when steps can be taken to delay or even prevent what otherwise would be inevitable. That shift to prevention is widely recognized as having the potential to result in unprecedented gains in patient outcome and cost containment.

Recent advances in the biological sciences have also identified relationships between biomarkers and diseases that not only indicate an individual's predisposition for a particular disease, but also how a patient may respond to particular treatments for that disease. The identification of biomarkers that help predict the efficacy of particular therapies permits physicians to tailor a treatment regimen for a particular patient. Such tailoring, in turn, lowers healthcare costs. That benefits not only individual patients and public and private insurance companies. It also benefits the federal government and state governments that now bear substantial healthcare funding obligations. Personalized medicine achieves significant efficiencies—and dramatic improvements in results and quality of life—by identifying which therapeutics will work for a particular patient, and which might be less effective, without physicians having to engage in the expensive, time-consuming, and often empirical process of determining whether a patient responds favorably to a therapy, which has been the hallmark of traditional medicine.

Novartis and many other healthcare companies are expending hundreds of millions of dollars to identify new biomarkers and apply their detection to new diagnostic and therapeutic methods. Although driven by the desire to improve healthcare, the prospect of patent protection also provides an important incentive to expend the time, effort, and dollars involved in making biomedical discoveries and translating them into new medical procedures that help patients. The days of administering a drug to all patients sharing a particular disease may soon be over as healthcare companies identify the patient subpopulations most likely to benefit from any one particular therapy. Thus, it is of paramount importance that appropriate consideration be given to the patentability of the process claims at the heart of personalized medicine.

The incentives afforded by the patent system, which spur on these critical advancements, may be at risk if this Court adopts the approach of the dissent in *Lab. Corp.* or the Federal Circuit's decision below. It is all too easy to dismiss the relationships being identified in this new era of personalized medicine as discoveries of the laws of nature. After all, they reflect a correlation between a biomarker and a patient's predisposition to have a disease or respond to a particular drug. But the discovery of those relationships and their utility in treating diseases can represent a critical advance in the important art of making the unhealthy healthy, or providing the individual who is prone to disease with immunity to its effects. Where a new and useful process for identifying those who are at risk for disease or most likely to benefit from a particular treatment is discovered, it represents a true advance in the art of medicine and technology. The fact that the claimed invention is not tied to a particular machine or transformation should not exclude it from being patentable subject matter nor make it less worthy of patent protection.

2. *The Claim at Issue in* Lab. Corp. *Is Patent-Eligible Under § 101*

The invention at the core of the controversy in *Lab. Corp.* was a method for detecting B vitamin (cobalamin or folate) deficiencies. See *Metabolite Labs., Inc.* v. *Lab. Corp. of Am. Holdings*, 370 F.3d 1354, 1358-59 (Fed. Cir. 2004). Deficiencies in cobalamin and folate are medically significant. If left untreated, such deficiencies can lead to serious complications including cardiovascular, neurologic, and psychiatric pathologies, such as stroke, peripheral neuropathy, and depression. See, *e.g.*, Robert C. Oh & David L. Brown, *Vitamin B12 Deficiency*, 67 Am. Fam. Physician 979, 979 (2003). Claim 13 of U.S. Patent No. 4,940,648, the only claim at issue in *Lab. Corp.*, reads as follows:

> 13. A method for detecting a deficiency of cobalamin or folate in warm-blooded animals comprising the steps of:

> assaying a body fluid for an elevated level of total homocysteine; and
>
> correlating an elevated level of total homocysteine in said body fluid with a deficiency of cobalamin or folate.

See 370 F.3d at 1358-59. The law of nature exploited in the claimed method is the fact that cobalamin and folate are used by the body as co-factors for enzymatic activity. Much as an automobile engine cannot convert gasoline into motive power in the absence of spark plugs, the enzyme that the body employs to convert homocysteine into cysteine cannot effectively accomplish that conversion in the absence of its co-factors cobalamin and folate. Thus, an increase in homocysteine and a decrease in cysteine, both of which would occur if the enzyme were not functioning properly, may be indicative of a deficiency in one or both of the co-factors. Claim 13 therefore represents a particular application of the discovery that homocysteine is converted to cysteine by an enzyme requiring cobalamin or folate as a co-factor for optimal activity. Specifically, the claim is directed to measuring increased levels of homocysteine (which occur because it is not being enzymatically converted to cysteine) as a marker for a cobalamin or folate deficiency.

The concerns raised by Justice Breyer in his dissent in *Lab. Corp.* are significant and deserve a full and robust debate. But the debate in *Lab. Corp.* was distorted by the way in which that case had been litigated, and the issues framed, in the lower courts. Under controlling jurisprudence, patent-infringement liability attaches to a method claim when a single party can be held accountable for practicing all steps of the claim. See *Muniauction, Inc.* v. *Thomson Corp.*, 532 F.3d 1318, 1328-30 (Fed. Cir. 2008) (a method claim is infringed only when a single party can be found to have performed every step of the claim, or where a party can be held vicariously liable for others practicing those steps). In *Lab. Corp.*, the parties did not dispute before the Federal Circuit whether the doctors performed one of the critical steps, which was the assaying step. See *Metabolite Labs.*, 370 F.3d at 1364 n.1. Instead, the focus of the parties' arguments was the district court's interpretation of the correlating step of the claim and whether, as a result of that construction, the doctors could be said to have performed it. Because the assaying step was not in dispute, the correlating step became determinative of whether doctors infringed the claim.

The exclusive focus of the infringement inquiry on the correlating step all but ensured that the import of the assaying step would be conceptually disregarded as merely "gather[ing] data" in the context of the dissent's § 101 analysis. See *Lab. Corp.*, 548 U.S. at 137 (Breyer, J., dissenting). Without the benefit of a fully developed record regarding the meaning and import of the assaying step, the *Lab. Corp.* dissent appeared to construe claim 13 as embodying only the correlation between elevated homocysteine levels and a deficiency in cobalamin or folate, and, in turn, viewed the claim as impermissibly directed to a law of nature, in violation of § 101.

The assaying step is an integral limitation of the claim that cannot be disregarded when analyzing the claim's compliance with § 101. Indeed, were the correct analysis applied, it would have been clear that the claim does not attempt to monopolize a law of nature. It is a general principle of patent law that "claims must be considered as a whole." *Diehr*, 450 U.S. at 176, 188; see also *Aro Mfg. Co.* v. *Convertible Top Replacement Co.*, 365 U.S. 336, 345 (1961) (applying this principle to analyzing infringement); *Para-Ordnance Mfg., Inc.* v. *SGS Importers Int'l, Inc.*, 73 F.3d 1085, 1088 (Fed. Cir. 1995) (applying the principle to a determination of obviousness).

The assaying step of claim 13 serves a critical function. Beyond providing a measurement needed to make the correlation that the second step of the claim requires, the assaying step enables a doctor to make a diagnosis with respect to a particular patient and prescribe a therapy for treating that patient. That is no trivial matter. By according the assaying step its proper meaning, claim 13 is no longer directed to the law of nature *itself*, but to a practical *application* of that law. Indeed, as a matter of logic, the ability to make a diagnosis cannot be changed from an application of a law of nature into the law of nature itself, or vice versa, simply because the claim does or does not explicitly refer to a machine or transformative events.

As a result, the claim at issue in *Lab. Corp.* does not preempt "'basic tools of scientific and technological work,'" *Lab. Corp.*, 548 U.S. at 127 (Breyer, J., dissenting) (quoting *Gottschalk*, 409 U.S. at 67), that should be free for anyone's use. Significantly, the claim does not encroach on the practice of medicine as envisioned in the dissent. For example, the claim does not prevent doctors from drawing conclusions based on test results they are not accountable for generating. Similarly, the claim presents no bar to doctors mentally considering or applying the correlation when it is not tied to a test result. Nor does the claim cover the population of people whose bodies inherently manifest the correlation because they are deficient in cobalamin or folate. Rather, the claim is limited to only those situations where a single actor can be held accountable for both: (a) assaying the amount of homocysteine present in a body fluid; and (b) correlating an elevated amount with a cobalamin or folate deficiency.

In addition, the assaying step requires considerable human intervention; a doctor cannot detect a deficiency in cobalamin or folate through simple observation of a patient. Such a diagnosis can only be reached following testing of a sample. Such deliberative action is tantamount to creating a machine that operates in accordance with the law of nature or using the law to induce a transformation. Hence, claim 13 falls comfortably within *Diehr*'s pronouncement that patent-eligibility should be extended to "anything under the sun that is made by man." *Diehr*, 450 U.S. at 182.

Furthermore, the patentee in *Lab. Corp.* was correct in arguing to this Court that the assaying techniques necessary to measure cobalamin and folate levels do invariably implicate transformations of one form or another. Hence, the claim at issue did not need to recite a particular assaying means, as the dissent suggests, see 548 U.S. at 136 (Breyer, J., dissenting), for the patentee to avail itself of such an argument; the claim language should have sufficed. Moreover, there is nothing otherwise inappropriate about using a term such as "assaying" (or "detecting" or "measuring") in the first step of a diagnostic-process claim so long as such a term: (a) is properly supported by the specification under § 112, see, *e.g.*, *In re Swinehart*, 439 F.2d 210, 213 (C.C.P.A. 1971); *In re Grimme*, 274 F.2d 949, 952 (C.C.PA. 1960); and (b) does not read on the prior art under §§ 102 and 103.

The points made above are equally applicable to virtually any diagnostic claim relating to personalized medicine. At a minimum, such claims involve an assay or detection step, such as a genetic test to determine the presence or absence of a particular DNA sequence, coupled to a subsequent correlation of the presence or absence of that sequence with a predisposition for either developing a disease or receptiveness to a particular therapy. In such contexts, the act of detecting the DNA sequence, or some other biomarker, is a significant corporeal intervention that invariably implicates transformative events. Moreover, the detection step enables the law of nature to be applied to facilitate a diagnosis or treatment. Such applications of the law of nature take the claim out of the realm of monopolizing the law of nature itself. Again, when not accountable for performing an assaying or detection step, doctors do not infringe when they use the results of such a step to counsel a patient. By embodying so much more than mere naturally-occurring correlations, diagnostic claims relating to personalized medicine fall well within the scope of § 101, as defined by this Court's precedent.

3. *The Rigidity of the Decision Below Improperly Threatens Diagnostic-Process Claims*

The Federal Circuit's unreasonably rigid application of the machine-or-transformation test also jeopardizes the patent-eligibility of diagnostic-process claims. In contrast to the test applied by the Federal Circuit, § 101 requires only that the "invent[ion] or discover[y]" for which protection is sought be "new and useful." As shown above, diagnostic-process claims are based on discoveries of previously-unknown relationships, without which the benefits they unlock would remain hidden. Additionally, they are indisputably "useful." Personalized medicine can be the difference between life and death. It directly enhances the quality of, or even sustains the very existence of, human life. It is hard to imagine a more "useful" invention than a process applying newly discovered natural relationships to that end.

The Federal Circuit's test is, of course, one way to determine that a process is patent-eligible, but the adoption of a strict rule, which extols consistency at the expense of innovation, is in direct conflict with this Court's precedent. The diagnostic-process claims at the heart of personalized medicine are the result of the same kind of intellectual exertion and have the same utility as machine-age processes, even though they are couched in the language of molecular biology rather than that of mechanics and electronics. Factual and policy considerations in the 21st century show the wisdom of this Court's description of § 101 as a "dynamic provision designed to encompass new and unforeseen inventions." *J.E.M. Ag. Supply, Inc.* v. *Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124, 135 (2001). The machine-or-transformation test takes the opposite approach, forcing all process claims into a mold that decidedly looks backward in time. These considerations cast considerable doubt on any approach that would allow life-saving diagnostics to be patented only if they can satisfy a rigid machine-or-transformation test.

* * *

The analysis suggested in the *Lab. Corp.* dissent and the machine-or-transformation test articulated by the decision below have the potential to deny patent protection to diagnostic-process claims that are no less deserving of that protection than any other new and useful discovery. They would do so, moreover, by writing new requirements into the text of § 101 and by refusing to acknowledge the full content of those claims. Nothing in the text or history of § 101 suggests that patent protection ought not extend to the valuable fruits of the exacting labor that must be invested to develop such important new medical advances. Nor is there any basis for this Court engrafting such an exclusion into the statute itself.

C. Regardless of How It Resolves the Instant Appeal, This Court Should Not Endorse the Machine-or-Transformation Test as the Definitive Means for Assessing the Patent-Eligibility of Process Claims

No doubt, petitioners and other *amici* will demonstrate that the Federal Circuit simply misread this Court's cases when it interpreted them as imposing the machine-or-transformation test as the definitive standard for judging the patent-eligibility of a process claim. The Court thus should reverse the decision below in light of the Federal Circuit's fundamental misreading of this Court's cases and the text of § 101.

If the Court endorses the machine-or-transformation test in this context, nonetheless, it should make clear that its decision does not make that test the dispositive standard against which all process claims' compliance with § 101 must be judged. Novartis does not believe that diagnostic-process claims necessarily fail to satisfy the machine-or-transformation test as a general matter. But the Court ought not attempt to create a one-size-fits-all solution in the context of a case, like this one, which provides no reason to rule that expansively. As the *Lab. Corp.* dissent makes clear, a diagnostic-process claim may implicate the "laws of nature" exception to § 101, whereas business-method claims, like those at issue in the present case, implicate the distinct "abstractions" exception to § 101. The substantial differences between a claim to diagnosing a pathology (as illustrated in *Lab. Corp.*) and price hedging (as illustrated in this case), and the likely legal consequences stemming from those differences, only further underscore the fact that this case is not the proper vehicle for assessing whether a diagnostic-process claim must or can meet a machine-or-transformation test.

Accordingly, should this Court affirm the judgment below, it should reserve for another day whether the machine-or-transformation test should be the sole test for judging the patent-eligibility of diagnostic-process claims. Such a reservation will ensure that lower courts and litigants do not attribute to this Court a "holding" that extends inappropriately beyond the issues and matters before it. Reserving the issue will facilitate this Court's ability to resolve that issue after a full record is developed in an appropriate case squarely raising a diagnostic-process claim's compliance with § 101.

CONCLUSION

This Court's precedents regarding patent-eligibility under 35 U.S.C. § 101 have served the country well and, if reaffirmed, will continue to do so. By contrast, the Federal Circuit's rigid implementation of the machine-or-transformation test represents an unnecessary departure from this Court's precedents. And it has the potential to jeopardize the benefits of many modern innovations, including the innovations that will allow personalized medicine to become a reality. Similarly, the *Lab. Corp.* dissent too freely invokes the "law of nature" exception to deprive a diagnostic-process claim of patent-eligibility under § 101. This Court should therefore reaffirm its broad interpretation of § 101 and reverse the Federal Circuit's pronouncement that the so-called machine-or-transformation test is the sole test for judging the patent-eligibility of all process claims.

Respectfully submitted.

JENNIFER GORDON
SCOTT B. FAMILANT
STEVEN P. LENDARIS
JENNIFER COZEOLINO
BAKER BOTTS L.L.P.
30 Rockefeller Center
New York, NY 10112
(212) 408-2500

JEFFREY A. LAMKEN
Counsel of Record
BAKER BOTTS L.L.P.
1299 Pennsylvania Ave., NW
Washington, D.C. 20004-2400
(202) 639-7700

EVAN A. YOUNG
BAKER BOTTS L.L.P.
1500 San Jacinto Center
98 San Jacinto Boulevard
Austin, Texas 78701-4078
(512) 322-2500

Counsel for Amicus Curiae Novartis Corporation

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AMICUS
CURIAE
BRIEF

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In The
Supreme Court of the United States

◆

BERNARD L. BILSKI and RAND A. WARSAW,

Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY
OF COMMERCE FOR INTELLECTUAL
PROPERTY AND ACTING DIRECTOR,
PATENT AND TRADEMARK OFFICE,

Respondent.

◆

**On Writ Of Certiorari To The
United States Court Of Appeals
For The Federal Circuit**

◆

BRIEF OF ON TIME SYSTEMS, INC. AS *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY

◆

STUART P. MEYER
Counsel of Record
TYLER A. BAKER
FENWICK & WEST LLP
801 California Street
Mountain View, CA 94041
(650) 988-8500

Counsel for Amicus Curiae

COCKLE LAW BRIEF PRINTING CO. (800) 225-6964
OR CALL COLLECT (402) 342-2831

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QUESTIONS PRESENTED

1. Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

2. Whether the Federal Circuit's "machine-or-transformation" test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273.

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INTEREST OF THE *AMICUS CURIAE*[1]

On Time Systems, Inc. is an advanced-technology company specializing in software for the optimization of complex industrial problems. The technology of On Time Systems has applications in numerous industries ranging from shipbuilding to the design of intelligent traffic control systems for urban areas. On Time Systems serves both public and private sector customers. The key executives at On Time Systems are Dr. Matthew Ginsberg and Dr. David Etherington, the co-founders of the University of Oregon's Computational Intelligence Research Laboratory ("CIRL"). Since its foundation, CIRL has been a leading research laboratory in artificial intelligence, search optimization and constraint satisfaction. On Time Systems was created to work with CIRL to develop and commercialize applications of optimization technology. The personnel of On Time Systems have multidisciplinary education, training and industry experience. For example, Dr. Ginsberg's education was as a relativistic astrophysicist and mathematician; Dr. Etherington was trained in computer science and artificial intelligence.

On Time Systems holds a number of patents on its technologies, and at the same time is aware that

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[1] In accordance with Sup. Ct. R. 37, On Time Systems states that this brief was not authored in whole or in part by counsel to a party, and that no monetary contribution to the preparation or submission of this brief was made by any person or entity other than this *amicus curiae* or its counsel.

third parties hold patents on technologies in the various industry segments in which On Time Systems operates. Those patents are the result of extensive and expensive research and development. Without patent protection, the results of those efforts could be easily copied by competitors, dramatically reducing the incentives for innovation.

On Time Systems has no interest in any party in the present case or any stake in the outcome of this case. Rather, On Time Systems has a strong interest that this Court interpret the patent law in a manner consistent with the constitutional underpinnings that have fostered the remarkable story of innovation that has defined this country from its agricultural beginnings, through the Industrial Age and now into the Information Age.[2]

◆

INTRODUCTION AND SUMMARY OF THE ARGUMENT

The standard for patentability stated by the Federal Circuit below is too narrow. This brief addresses an issue that the Court will encounter in drawing the line between patentable and unpatentable subject matter. Whether an "abstract" claim is patentable depends critically on what one means by "abstract." This word has been used in many different ways in the analysis of patentable subject matter, often with little specificity as to the sense in which it is used. It is entirely appropriate for "abstract ideas" to be unpatentable if "abstract" refers to something qualitative considered apart from a subject or application, or if "ideas" refers to amorphous mental notions without any application outside the mind. Historically, claims directed to "laws of nature" have also been categorized as abstract ideas. One may question the accuracy of such categorization but the result, *i.e.*, unpatentability, seems appropriate in this usage as well.

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[2] This brief is being filed with the consent of the parties. In accordance with Sup. Ct. R. 37.2(a), On Time Systems provided the parties with timely notice of its intention to file this *amicus curiae* brief. In accordance with Sup. Ct. R. 37.3(a), the parties have filed with the Clerk of this Court general consents to the filing of *amicus* briefs.

However, when the word "abstract" is used to refer to specific applications that happen to manipulate abstract representations of things rather than physical objects, it is no longer sensible to presumptively rule out patentability on that basis alone. To extend a blanket preclusion against any claim labeled as "abstract" is to inaccurately conflate the distinct notions of abstractness and natural principles. Such a conflation does not honor the United States Constitution, the language used by Congress in § 101, this Court's precedents, or the realities of modern life. Inventions can be patentable without being of a sort that would hurt if you dropped them on your foot.

On Time Systems takes no position on whether Messrs. Bilski and Warsaw deserve a patent on their method for managing consumption risk costs. There may well be any number of reasons that such an invention should not be afforded patent protection. On Time Systems does, however, believe that the first question presented by the Court must be answered in the affirmative. The exclusive test for patentability asserted by the Federal Circuit is far too limited in its analysis, particularly in the context of modern technological advances. On Time Systems urges the Court to reject that standard in favor of a more flexible one that is consistent with the encompassing language of § 101. There is simply no reason in precedent or principle to limit patents to inventions that center on physical transformations or use of a particular machine. And, in rejecting the standard below, the Court should take care to distinguish carefully between different concepts of abstractness.

◆

DISCUSSION

I. THE TERM "ABSTRACT" HAS BEEN USED TO DESCRIBE SEVERAL DIFFERENT CONCEPTS

Numerous other *amici* have addressed the "laws of nature, physical phenomena, and abstract ideas" precedents of this Court in the briefs below and at the petition stage. On Time Systems will not repeat those presentations here. Rather, this brief will focus on a very narrow issue within the larger discussion: the various ways in which a process can be said to be "abstract" and how that impacts its patentability.

Much commentary about the scope of patentable subject matter has addressed the relationships between processes and "laws of nature, natural phenomena, and abstract ideas" as discussed, for example, in *Diamond v. Diehr*, 450 U.S. 175, 185 (1981). There remains a paucity of discussion about what may or may not make a process abstract *per se*. This is a critical determination, since a process that is abstract in one sense may as a result be unpatentable, while a process that is abstract in another sense should remain eligible for protection. The line-drawing that needs to be done in this regard is admittedly difficult, as shown by the fact that many of this Court's decisions regarding the boundaries of patentable subject matter have been accompanied by dissents evidencing a wide range of perspectives. This brief discusses four ways in which processes have been characterized as abstract. On Time Systems suggests that processes that are abstract solely because they involve manipulation of intangibles should not be disqualified from patent protection on that basis alone.

On Time Systems is not the first to recognize the need to undertake more detailed consideration of the precise words used in patentability analysis. This Court recognized it over 150 years ago:

> The word *principle* is used by elementary writers on patent subjects, and sometimes in adjudications of courts, with such a want of precision in its application, as to mislead. It is admitted, that a principle is not

> patentable. A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right. Nor can an exclusive right exist to a new power, should one be discovered in addition to those already known. Through the agency of machinery a new steam power may be said to have been generated. But no one can appropriate this power exclusively to himself, under the patent laws. The same may be said of electricity, and of any other power in nature, which is alike open to all, and may be applied to useful purposes by the use of machinery.
>
> In all such cases, the processes used to extract, modify, and concentrate natural agencies, constitute the invention. The elements of the power exist; the invention is not in discovering them, but in applying them to useful objects.

Le Roy v. Tatham, 55 U.S. 156, 174-175 (1852).

As detailed in the sections below, processes have historically been labeled as "abstract" in at least the four following distinct ways: (A) as reciting a law of nature; (B) as referring to a broad application of a law of nature without limitation; (C) as being vague and lacking specificity; and (D) as referring to manipulations of intangible entities. While there may be reason to preclude patentability for the first three categories, whether under § 101 or otherwise, there is no similar reason to condemn inventions as unpatentable solely because they can be placed in the last category.

A. Laws of Nature

A first perspective on processes as abstractions focuses on those processes that merely recite a "law of nature," and nothing more. Thus, a process of using the Pythagorean theorem to determine the length of a diagonal support piece (such as to support a wall during construction) is appropriately thought of as simply reciting and attempting to "own" that theorem. This Court has, on a number of occasions, held such processes to be unpatentable attempts to wholly appropriate natural principles.

In *Funk Bros. Seed Co. v. Kalo Inoculant Co.,* 333 U.S. 127, 132 (1948), the Court recognized that an application of a newly discovered natural principle may be commercially valuable, but that is not sufficient to make a claimed invention patentable. "Even though it may have been the product of skill, it certainly was not the product of invention. There is no way in which we could call it such unless we borrowed invention from the discovery of the natural principle itself." In contrast, in *Mackay Radio & Telegraph Co. v. Radio Corp. of America*, 306 U.S. 86, 94 (1939), the Court held patentable an antenna structure based on a mathematical formula, and observed that, "While a scientific truth, or the mathematical expression of it, is not patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be." In *Parker v. Flook*, 437 U.S. 584, 591 (1978), the Court cited *Funk Bros.* and *Mackay Radio* for the analytical requirement that, "[T]he process itself, not merely the mathematical algorithm, must be new and useful." Where a particular mathematical algorithm merely restates a scientific truth, a subject matter limitation based on "laws of nature" makes sense.

B. Overbroad Claim Scope

A second perspective linking processes with "abstract ideas" is based on the potential overbreadth of such claims. This perspective arises where the claim recites a desired effect or result, with little or no limitation as to the mechanism for achieving that result.

For example, the Court found claim 8 of an invention by Samuel Morse to be unpatentable subject matter because it claimed use of electromagnetism to print intelligible characters at a distance, without regard to the means by which this could be accomplished. *O'Reilly v. Morse*, 56 U.S. 62, 117-120 (1853). The Court expressed its concern that such a results-oriented claim, if allowed, would violate a longstanding tenet of patent law "that any one who afterwards discovered a method of accomplishing the same object, substantially and essentially differing from the one described, had a right to use it." *Id.* at 119. The Court in that case could not reconcile such a broad grant with the language Congress chose to use in enacting the patent law.

Over a hundred years later, the Court revisited *O'Reilly* and interim decisions in *Gottschalk v. Benson*, 409 U.S. 63, 68 (1972) and was likewise concerned about breadth, stating, "Here the 'process' claim is so abstract and sweeping as to cover both known and unknown uses of the BCD to pure binary conversion."

C. Lack of Specificity

A third perspective has to do with vagueness and ambiguity of claims, particularly disembodied thoughts that are "abstract" in the sense of "an abstract principle, which means a principle considered apart from any special purpose or practical operation. . . ." *Le Roy*, 55 U.S. at 185 (Nelson, J., dissenting, quoting from the Lord Justice in a patent case before the Court of Sessions in Scotland).

More recently, the Court in *Benson* observed that the chemical process and physical acts involved in an earlier case were "sufficiently definite to confine the patent monopoly within rather definite bounds." *Benson*, 409 U.S. at 69 (distinguishing *Corning v. Burden*, 56 U.S. 252 (1853)). The use of the word "definite" twice in the same sentence suggests a focus not only on overbreadth as noted above, but also on lack of specificity. Concern about overbreadth of a patent claim can indeed come from either certainty that the claim covers too much subject matter or uncertainty about the boundaries of the claim.

A process that is abstract in the sense that it remains unformed, ill-defined, or otherwise has not yet been reduced to reasonable certainty may well include subject matter that is outside the boundaries of 35 U.S.C. § 101. One of skill in the art would not be able to determine the metes and bounds of such a claim, and from that determine the scope of the inventor's exclusive right. A patent drawn on such matter also violates various other provisions of the patent law, most notably the requirements in 35 U.S.C. § 112 relating to written description, enablement, best mode, and definiteness. While in certain circumstances the question of patentable subject matter may be the most appropriate manner of preventing such abstract descriptions from being awarded patent protection, in most cases the sensible first line of defense against those should be the more directly applicable provisions of § 112.

D. Manipulation of Intangibles

A fourth way in which processes can be "abstract" is the one most relevant to On Time Systems and thousands of other companies and individuals in their daily endeavors. This fourth perspective addresses processes that are abstract only in that they involve manipulation of items that are not physical objects. Often, these items are representations of real-world things. For instance, On Time Systems has developed software used to route airplanes to minimize fuel usage. This software uses various inputs, such as weather forecasts that predict wind speed. The personnel of On Time Systems do not necessarily measure wind speed directly, much less determine the actual force at which the constituent oxygen, nitrogen and other particles in the air strike an airplane fuselage. In this sense the processes developed by On Time Systems for determining desirable airplane routes or shipbuilding task schedules are abstract. Each such process deals primarily with representations of real world objects – abstractions – rather than with the real world objects themselves.

II. MANIPULATION OF INTANGIBLES ALONE IS AN INSUFFICIENT REASON TO PRECLUDE PATENTABILITY

For decades, patent applicants and the U.S. Patent and Trademark Office ("PTO") have sidestepped the muddiness of the "abstract" label by arguing that their processes really are manipulating physical objects, even when it is clear to those in the art that such physical manifestations are not core to the real innovation. The typical example is a patent application related to an algorithm.[3] Historically,

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[3] This Court has recognized that the term "algorithm" is susceptible of various meanings and in the past has limited its consideration to purely mathematical algorithms. *See, e.g.*, *Diehr*, 450 U.S. at 186 n.9 ("Our previous decisions regarding the patentability of 'algorithms' are necessarily limited to the more narrow definition. . . ."). In its use in industry, "algorithm"

(Continued on following page)

applicants argue that their processes really are manipulating physical objects. They assert that computer memory is being manipulated (as it is), and suggest that this suffices to bind the abstract idea to a patentable process.

Avoiding the issue of abstractness in this manner may work in individual cases, but does not lead to a robust, generalizable solution to the issue. True, there is some manner of physical manipulation of elements of computer memory, and this does provide an appropriate basis for showing statutory subject matter. But to argue that an algorithm is not a process that manipulates abstract entities is to profoundly misdescribe it. Some algorithms manipulate representations of physical objects; others manipulate representations that may not have direct physical counterparts. There is no sound basis for making patentability turn solely on whether such a physical counterpart exists.

The prohibition against patenting laws of nature would have appropriately prevented Isaac Newton

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is used synonymously with "process" and "method" as a way to do something. Algorithms may themselves manipulate entities that may be abstract (*e.g.*, an algorithm for proving mathematical theorems) or may manipulate entities that refer to physical objects (*e.g.*, an algorithm for determining how to load troops and materiel onto a fleet of cargo planes so as to minimize the number of planes needed for a mission). In *Diehr*, the Court expressly declined to pass judgment about the patentability of algorithms that are not mere recitations of mathematical formulas. *Id.*

from patenting the laws of motion that bear his name. However, it is and should continue to be possible to patent a device that uses those laws of motion to accelerate a specific object, such as a bowling ball, to a set speed, such as seven miles per hour. A process for implementing such acceleration, specific to a bowling ball, is likewise patentable, even under the test set forth by the Federal Circuit below. The notion that such a process is unpatentable as usurping an idea is distinct from the issue of whether it deals with abstract entities rather than concrete objects. Computer algorithms are processes that just happen to manipulate data structures instead of bowling balls. Reliance on a statement that electrons in a computer's processing unit should be considered like bowling balls leads to the correct result (*i.e.*, patentable subject matter). However, such analysis leaves unaddressed the broader question of how to handle processes that do not have electrons or other physical counterparts on which the applicant can rely.

The previously mentioned process for routing airplanes to minimize fuel burn is very unlikely, at the end of the day, to manipulate aircraft directly. At most, perhaps a piece of paper is printed that is presented to the pilot. The protectable innovation, assuming that there is one, is in the development of novel methods for producing the information that is given to the pilot. The end result is not a deflection of the airplane's control surfaces. It is not the piece of paper. It is not the movement of electrons within the computer used to construct the flight plan. It is information itself, pure and simple. The patent bar, PTO and bench should expressly acknowledge that manipulation of information or other abstract entities can be as applicable to the real world as can manipulation of physical objects. None of this Court's precedent precludes such recognition.

As another example, consider one of the most important open questions in mathematics – the so-called "Riemann hypothesis." This hypothesis posits certain attributes of the "zeroes" or "roots" of a particular mathematical function, which are the points at which the function equals zero. While the hypothesis is entirely theoretical, the implications regarding the distribution of prime numbers, with corresponding ramifications on cryptography, are profound. Since being postulated 150 years ago, mathematicians and computer scientists have analyzed countless zeroes of the function in question, all suggesting that the hypothesis is true. To this day, however, the Riemann hypothesis remains no more than a hypothesis. From a practical perspective, if empirical evidence suggests that the hypothesis is true, it is irrelevant whether it is a scientific truth, as a process that assumes it to be true might well be extremely valuable in cryptographic applications. A patent claim based on this conjecture could hardly be said to usurp a scientific truth if the hypothesis has not been proven to be true (and may subsequently turn out to have been false all along), so any assertion of unpatentability must be based on something other than a "law of nature" argument. There is no basis under § 101 for precluding from patent protection a cryptographic process that manipulates abstract representations in accordance with this hypothesis.

III. THE FEDERAL CIRCUIT'S STANDARD IS CONTRARY TO CONGRESSIONAL INTENT AND THE COURT'S PRECEDENTS

Responding to the first question presented by the Court, the "machine-or-transformation" test utterly fails to recognize that at least some processes that manipulate abstract entities are eligible for patent protection, as set forth above. None of the Court's decisions recited above calls for such a blanket prohibition whenever a claimed process operates on things that are not physical.

Congress has been careful to draft into the patent law a highly inclusive description of patentable subject matter in § 101, while at the same time providing a number of filters in other sections to ensure that inappropriate subject matter does not get the benefit of patent protection. Sections 102 and 103 of the statute, both styled as "Conditions for patentability . . . " in their titles, protect against granting patents where prior work is the same as, or makes obvious, a newly claimed invention. Section 112 prevents vague and undeveloped notions from being conferred patent rights, requiring that a specification "contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise and exact terms as to enable any person skilled in the art . . . to make and use the same. . . ."[4] Sections 302 and 311 permit the public to request *ex parte* and *inter partes* reexamination of a patent that may have been improvidently granted. Section 101, in contrast, provides language that can only be read as broad and permissive rather than limiting. As noted by this court in *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980), in choosing expansive terms for § 101, "modified by the comprehensive 'any,' Congress plainly contemplated that the patent laws be given wide scope." Congressional intent would hardly be served by foreclosing protection for processes that operate on intangibles, which are now such an important component of our industrial base.

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[4] In *Tilghman v. Proctor*, 102 U.S. 707, 727-728 (1880), the Court analyzed the scope of patentability of processes and quoted from *O'Reilly*, 56 U.S. 119 to establish that an inventor deserves a patent

> [P]rovided he specifies the means he uses in a manner so full and exact that any one skilled in the science to which it appertains can, by using the means he specifies, without any addition to or subtraction from them, produce precisely the result he describes. And if this cannot be done by the means he describes, the patent is void.

O'Reilly, 56 U.S. 119. The Court in *Tilghman* held that such analysis (which would be § 112 analysis under today's patent law), "affords the key to almost every case that can arise." 102 U.S. at 728.

CONCLUSION

A process that is "abstract" because it does little more than recite a law of nature is qualitatively distinct from a process that is "abstract" because it manipulates non-concrete entities. As evidenced by the fact that a large portion of the world's industrial product is now comprised of intangible assets as opposed to material ones, modern society considers these non-physical objects to be just as "real" as their concrete counterparts. A new organism's genetic code is as real as (and in a philosophical sense indistinguishable from) the organism itself. A digital circuit is a digital circuit, whether expressed as a Boolean truth table, a state diagram, or a schematic of interconnected electronic components. Nothing in § 101 or in this Court's precedents calls for a talismanic requirement that a process, in order to be patentable, must be tied to a particular machine or transform a particular article into a different state or thing. The evolution of science and technology requires us to recognize that manipulations of representations are fully within the scope of patentable subject matter.

The Federal Circuit erred in asserting that the "machine-or-transformation" test is the exclusive analytical tool to be used to determine whether a process claim recites patentable subject matter. The Court should reject the narrow standard asserted below, and at the same time remain vigilant against endorsing any limitations that might have similar harmful effects. Some claims that are characterized as "abstract" are properly excluded from patentability, but others clearly should not be. Specifically, the mere fact that a claimed process manipulates abstract entities should not be sufficient reason to consider it nonstatutory subject matter for patenting.

Respectfully submitted,

STUART P. MEYER
Counsel of Record
TYLER A. BAKER
FENWICK & WEST LLP
801 California Street
Mountain View, CA 94041
(650) 988-8500

Counsel for Amicus Curiae

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CURIAE
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IN THE
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BERNARD L. BILSKI AND RAND A. WARSAW,
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Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF FOR THE STATE OF OREGON AS *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY

GARY W. ODOM
PATENT HAWK
123 NW 12th Avenue, #1545
Portland, Oregon 97209

JORDAN M. KUHN
PLATINUM PATENTS
1550 Platte Street, #457
Denver, CO 80202

WILSON-EPES PRINTING CO., INC. – (202) 789-0096 – WASHINGTON, D.C. 20002

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QUESTIONS PRESENTED

1. Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ... despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

2. Whether the Federal Circuit's "machine-or-transformation" test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. §273.

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INTEREST OF THE *AMICUS CURIAE*

Gary Odom is an inventor and patent holder. Both parties are patent practitioners whose clients include inventors, businesses and law firms, either active in obtaining and enforcing patents, or defending against patent assertion.

Patents rightly reward innovation, but it is important that the guidelines be clear, so as to avoid needlessly prolonged litigation in determining patent boundaries. It is further in the interest of all those involved with patents that the process of patent adjudication be streamlined. This is best accomplished by adhering to the laws as Congress wrote and intended them, and as interpreted by the Supreme Court.

SUMMARY OF ARGUMENT

The questions presented in this case, although rightly answered in the affirmative, are not directly applicable to determining the validity of the instant claims by *Bilski et al* before the Court. *Bilski*'s claims are not patentable first and foremost because they lack definiteness, and so are not valid under 35 U.S.C. §112 ¶ 2. Finding this dispositive on narrow grounds, the Court need not reach to the broader issue of §101.

But dicta by the Court on §112 ¶ 2 and §101 are crucial, because the current guidelines from the Federal Circuit for both §112 ¶ 2 and §101 stray from statute and well-grounded Supreme Court precedents.

The law broadly affords patentable subject matter under 35 U.S.C. §101: "...any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof..."[1] The Court affirmed this with regard to process patentability in *Diamond v. Diehr*[2]. The Federal Circuit instead has inflexibly interpreted as mandate what the Court had indicated as but "clues."

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[1] 35 U.S.C. §101 (emphasis added).

[2] *Diamond v. Diehr*, 450 U.S. 175 (1981).

The law specifically states that the *quid pro quo* of a patent grant requires "claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention."[3] The Federal Circuit instead has eviscerated this requirement, finding that a "claim will be found indefinite only if it 'is insolubly ambiguous, and no narrowing construction can properly be adopted . . . .'"[4]

This brief suggests nothing more than the Court affirm its long-standing precedents on §112 ¶ 2 and §101, and so put the patent grant back on the firm ground of requiring clarity while promoting "the progress of Science and useful Arts."[5]

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[3] 35 U.S.C. §112 ¶ 2.

[4] *Exxon Research & Eng'g Co. v. United States*, 265 F.3d 1371, 1375 (Fed. Cir. 2001).

[5] U.S. Constitution, Article 1, § 8.

ARGUMENT

1. APPLYING STATUTE IN CONSTRUING CLAIMS & THEIR VALIDITY

There is a logical sequence for construction of claims. The first step is understanding what a claim means. This is essential to establishing the boundaries of the claim. As such, the first hurdle in claim construction is §112 ¶2, determining the clarity of the claimed boundaries.

Upon passing that first test, the second hurdle is whether a claim is supported by its attendant specification, under §112 ¶ 1. So, §112 serves as the first gatekeeper, that claims are clear and enabled.

The hurdle then becomes whether the claim is patentable subject matter under §101. While §112, the first gatekeeper, is stern, §101 is an obliging gatekeeper, proscribing only "laws of nature, natural phenomena, and abstract ideas."[6]

Finally, the worthiness of a claim is tested for its novelty in light of §102 and §103. This third gatekeeper requires "more than the predictable use of prior art elements according to their established functions."[7]

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[6] *Diamond v. Diehr*, 450 U.S. 175, 185 (1981).

[7] *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

As such, the sequence of claim analysis arcs from matters of law to a matter of fact, all from the perspective of "any person skilled in the art to which it pertains."[8]

2. 35 U.S.C. §112 ¶2 IS A STRICT REQUIREMENT

A. The Law

The Court has repeatedly stated the need for clarity in patent claims -

> The patent laws "promote the Progress of Science and useful Arts" by rewarding innovation with a temporary monopoly. U.S. Const., Art. I, §8, cl. 8. The monopoly is a property right; and like any property right, its boundaries should be clear. This clarity is essential to promote progress, because it enables efficient investment in innovation. A patent holder should know what he owns, and the public should know what he does not. For this reason, the patent laws require inventors to describe their work in "full, clear, concise, and exact terms," 35 U.S.C. §112 as part of the delicate balance the law attempts to maintain between inventors, who rely on the promise of the law to bring the invention forth, and the public, which should be encouraged to pursue innovations, creations, and new ideas beyond the inventor's exclusive rights. *Bonito Boats,*

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[8] 35 U.S.C. § 112 ¶1.

> *Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 150 (1989).[9]

> "It has long been understood that a patent must describe the exact scope of an invention and its manufacture to "secure to [the patentee] all to which he is entitled, [and] to apprise the public of what is still open to them." *McClain v. Ortmayer*, 141 U.S. 419, 424 (1891)."[10]

The Federal Circuit, while paying lip service to clarity, has taken a diametric position -

> The second paragraph of 35 U.S.C. §112 requires that the specification of every patent must "conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." This requirement serves a public notice function, ensuring that the patent specification adequately notifies the public of the scope of the patentee's right to exclude. *See Honeywell Int'l, Inc. v. Int'l Trade Comm'n*, 341 F.3d 1332, 1338 (Fed. Cir. 2003). "A claim satisfies the definiteness requirement of § 112 "[i]f one skilled in the art would understand the bounds of the claim when read in light of the specification." *Exxon Research & Eng'g Co. v. United States*, 265 F.3d 1371, 1375 (Fed. Cir. 2001). A claim will be found indefinite only if it

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[9] *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722, 730 (2002) (emphasis added).

[10] *Markman v. Westview Instruments*, 517 U.S. 370, 373, 38 USPQ2d 1461 (1996) (emphasis added).

"is insolubly ambiguous, and no narrowing construction can properly be adopted . . . ." *Id.* On the other hand, "[i]f the meaning of the claim is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree, we have held the claim sufficiently clear to avoid invalidity on indefiniteness grounds." *Id.*"[11]

One cannot square the circle between requiring "full, clear, concise, and exact terms" and indefiniteness only if a claim is "insolubly ambiguous." CAFC laxity in its application of §112 ¶2 eviscerates definiteness, thereby creating uncertainty.

Ambiguity in patent claims is pernicious to notifying the public of the metes and bounds claimed by a patent, so as to know what does and does not infringe.

A claims drafter has every opportunity to state definite boundaries for a patent claim, even having the liberty to act as one's own lexicographer, and define terms within a claim so as to resolve any ambiguities that may otherwise arise. As such, there is no excuse for lack of clarity in claims.

The Court should affirm its precedent, and discard the Federal Circuit position.

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[11] *Praxair v. Advanced Technology Materials*, 543 F.3d 1306. 1319 (Fed. Cir. 2008) (emphasis added).

B. *Bilski*

"Risk position" is undefined in the specification, and even as a term of the art is imprecise. This lack of clear definition necessitated that the patent applicant act as his own lexicographer, which did not happen.

Claim 1 states that "a series of" purchase transactions "at a fixed rate" correspond with a risk position. What would having a risk position mean? Unclear. What would having a "counter-risk position" mean? Unclear. How are those with a counter-risk position identified? Unclear. How would a second series of purchase transactions "at a second fixed rate" affect the risk position? Unclear. This lack of definiteness for all steps stems from the lack of definition of the claimed risk and counter-risk positions. Simply put, "risk position" is not defined.

Compounding the indefiniteness comes with assigning a threshold to "balances the risk position." How would one of skill in the art know whether the claimed risk position achieved balance? All the specification states is that "The opposite risk positions make a risk management trade possible... This is a swap." Neither the claim nor specification define a metric for having attained the claimed balance.

Further, claim 1, step (b) claims identifying those with "a counter-risk position." How does this contribute to the supposed outcome in (c), where the risk position "balances"? Unclear. One could only reconcile step (b) with step (c) by supposition.

Finally, it is a nebulous proposition that balancing risk position, the claimed outcome, meets the stated preamble of "managing consumption risk costs." The preamble presupposes the managing is for a single party, but the balancing involves multiple parties, with no clear beneficiary. The premise versus the achievement of the claimed process, the very purpose of the process, is itself indefinite.

The *Bilski* claims raise more questions than answers with regard to the import and boundaries of: 1) the claim terms, 2) the steps in the process, 3) the outcome(s), and 4) the process as a whole. Would one of skill in the art understand the *Bilski* claims as "full, clear, concise, and exact terms"? Definitely not.

3. 35 U.S.C. §101 REQUIRES THAT A PROCESS BE "USEFUL"

A. The Law

In *Diamond v. Diehr*, the Court provided clues to patentable subject matter while reiterating "that Congress intended statutory subject matter to 'include anything under the sun that is made by man.'"[12]

> "In cases of statutory construction, we begin with the language of the statute. Unless otherwise defined, "words will be interpreted as taking their ordinary, contemporary, common meaning," *Perrin v. United States*, 444 U.S. 37,

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[12] *Diamond v. Diehr*, 450 U.S. 175, 185 (1981).

> 42 (1979), and, in dealing with the patent laws, we have more than once cautioned that "courts `should not read into the patent laws limitations and conditions which the legislature has not expressed.'" *Diamond v. Chakrabarty*, supra, at 308, quoting *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 199 (1933).
>
> "[W]e may not be unmindful of the Committee Reports accompanying the 1952 Act which inform us that Congress intended statutory subject matter to "include anything under the sun that is made by man." *S. Rep. No.* ***1979***, 82d Cong., 2d Sess., 5 (1952); H. R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952)."[13]

The crucial issue of all §101 cases before the Court has never been one of the technologies involved. It is tautological that a patent defines a new technology.

From 1793, the paramount criterion for patentability has been that a claimed invention be "useful." "Excluded from such patent protection are laws of nature, natural phenomena, and abstract ideas."[14] Beyond the other three categories of statutory subject matter, which are inherently tangible, processes may be claimed that attempt to drape utility over an abstraction. One danger of such process claims is that their scope is so broad as to be indefinite. Here is where §112 ¶2 and §101 intersect - that an indefinite process *ipso facto* renders a claim's usefulness unclear, and hence not patentable subject matter.

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[13] *Id* at 182 (emphasis added).

[14] *Id* at 185.

To address this, the Federal Circuit took an inflexible view by misinterpreting the following passage from the Court:

> "Recently, in *Gottschalk v. Benson*, 409 U.S. 63 (1972), we repeated the above definition recited in *Cochrane v. Deener*, adding: "Transformation and reduction of an article `to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines." 409 U.S., at 70."[15]

In its *Bilski* decision, the Federal Circuit took this "clue" from the Court and hardened it into a rule. The Court should affirm its precedents delimiting patent protection: that indications of useful processes should not be interpreted inflexibly. Clues are not rules. The §101 examination for a process is predicated on it being useful, not on its technological nature.

B. *Bilski*

Whether the process claims made by *Bilski* are patentable subject matter under §101, in being useful, is difficult to determine because *Bilski*'s claims are not definite. The nature of nebulous claims as inherently unpatentable rightfully belongs under §112 ¶2, without need to reach to the broader constructs of §101.

---

[15] *Id* at 184.

Leaving aside §112 ¶2 as dispositive in this case, *Bilski*'s claims go to "balancing" risk of a sort, even as the preamble posits instead "managing... risk costs." No machine is required, nor does a transformation transpire. Lacking those clues to patentability does not necessarily damn a claim from a §101 perspective, though they do make it suspect.

What *Bilski*'s "balancing" a risk position, or "managing" risk costs, lacks is a claim to utility. There is no manifestly useful outcome, no palpable product, no given result. It is not clear how the process is performed, what the tangible outcome is, or even who benefits.

The beneficiary of a claimed process is another clue to patentability. Normally, a user of a process benefits from a process's output. Hence the process is useful.

In Bilski claim 1, it is indefinite who benefits from balancing a risk position, because doing so involves parties inherently opposed: buyer and seller, the buyer preferring a lower cost, and the seller preferring a higher one. Balancing contrasting goals between opposing parties is an abstract idea, as the outcomes are dynamic and various, and thus indefinite. Again, §101 meets §112 ¶2. And, thus, another clue to what is not patentable: processes with variable and unbounded outcomes inherently posses an unpredictability that renders a claim to such a process unworthy of patent protection because its usefulness is uncertain.

The subject matter of *Bilski*'s claims is an abstract idea because the intrinsic usefulness of the process's outcome is not apparent. If one of skill in the art cannot ascribe a claimed process as tangibly useful in of itself, it is not patentable.

CONCLUSION

It is respectfully submitted that the Court affirm its previous precedents with regard to §101 and §112 ¶2.

Respectfully submitted,

Gary W. Odom
Patent Hawk
123 NW 12th Avenue, #1545
Portland, Oregon 97209

Jordan M. Kuhn
Platinum Patents
1550 Platte St. #457
Denver, CO 80202

Dated: July 24, 2009

AMICUS
CURIAE
BRIEF

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IN THE
Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR, PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF PHARMACEUTICAL RESEARCH AND MANUFACTURERS OF AMERICA AS *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY

OF COUNSEL

DAVID E. KORN
PHARMACEUTICAL RESEARCH AND MANUFACTURERS OF AMERICA
950 F St., N.W.
Washington, D.C. 20004
(202) 835-3400

HARRY J. ROPER
Counsel of Record
JENNER & BLOCK LLP
330 N. Wabash Avenue
Chicago, IL 60611
(312) 222-9350

PAUL M. SMITH
MARC A. GOLDMAN
DAVID Z. MOSKOWITZ*
JENNER & BLOCK LLP
1099 New York Avenue, N.W.
Suite 900
Washington, D.C. 20001
(202) 639-6000

*Admitted in NY only; supervised by principals of the firm

4XD2QM

Attorneys for Amicus Curiae

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INTEREST OF *AMICUS CURIAE*[1]

The Pharmaceutical Research and Manufacturers of America ("PhRMA") is a voluntary, nonprofit association that represents the country's leading research-based pharmaceutical and biotechnology companies. In the past decade, PhRMA's members have invested more than $350 billion to discover and develop new medicines and new uses for existing medicines, leading to huge benefits to patients. *See* PhRMA, PHARMACEUTICAL INDUSTRY PROFILE 2009 50 (2009).

New medicines accounted for 40 percent of the increase in life expectancy between 1986 and 2000. *See* Frank R. Lichtenberg, *The Impact of New Drug Launches on Longevity: Evidence from Longitudinal, Disease-Level Data from 52 Countries, 1982-2001*, 5 Int'l J. of Health Care Fin. & Econ. 47, 71 (2005). The benefits from new uses for existing medicines are also vast. Today, "the most important advances in treatment often come from products which have been on the market for a while but whose properties were not completely understood until intensive research after the drug was introduced." John Calfee, *The Golden Age of Medical Innovation*, The American (Mar./Apr. 2007), *available at* http://www.american.com/archive/2007/march-april-magazine-contents/the-golden-age-of-medical-innovation/. These include, for example, the use of AZT to treat HIV and multiple uses of Herceptin and Avastin to treat different types of cancer.

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[1] The parties have consented to the filing of this brief. No counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than amicus curiae or its counsel made a monetary contribution to its preparation or submission.

The issue in this case will potentially have significant impact on PhRMA's members.[2] A ruling limiting the scope of patentability under § 101, 35 U.S.C. § 101, potentially could limit the patentability of medical processes, dramatically diminishing incentives for innovation. A 2004 Department of Commerce study estimated that the average cost of bringing a new drug to market is approximately $1.3 billion, including the costs for unsuccessful drugs. *See* U.S. Dep't of Commerce, Int'l Trade Admin., *Pharmaceutical Price Controls in OECD Countries: Implications for U.S. Consumers, Pricing, Research and Development, and Innovation* 30-31 (Dec. 2004), *available at* http://www.ita.doc.gov/td/chemicals/drugpricingstudy.pdf. The costs of developing new uses for existing drugs are also substantial. As the Boston Consulting Group explains, "the size and the complexity of the clinical trials for each new indication are similar to the size and the complexity of those conducted prelaunch and . . . the failure rates remain high." Maya Said et al., *Continued Development of Approved Biological Drugs: A Quantitative Study of Additional Indications Approved Postlaunch in the United States* 6 (Boston Consulting Group, White Paper, Dec. 2007), *available at* http://www.bcg.com/impact_expertise/publications/files/Biologics_Dec07_final.pdf. In the absence of the incentives provided by patent protection for novel processes, much of the promising research for new methods of diagnosis and treatment will not occur. The ability to patent products alone is insufficient to provide the necessary incentives, because many of the new methods make use of products that are already known and that therefore are not patentable (or have already been patented).

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[2] A list of PhRMA members can be found at http://www.phrma.org/member_company_list.

SUMMARY OF THE ARGUMENT

This Court should ensure that however the scope of patentability is assessed under § 101, inventors retain the ability to patent medical processes, especially methods of diagnosis and treatment that make use of pharmaceuticals. PhRMA expresses no view on the Bilski patent itself. As for the machine or transformation test the Federal Circuit adopted, PhRMA believes there is no need for a new test because the existing prohibition on patenting of laws of nature and abstract ideas is sufficient. If this Court nonetheless adopts the Federal Circuit's test or some other test, it should make clear that medical-process patents that make use of pharmaceuticals fall within it.

To do otherwise would be a radical departure from a long history of patent protection. Patents for medical processes have been issued since the 1800s, and, while there was some question about their patentability for a period of time, a number of decisions in the 1930s, culminating in a Board of Patent Appeals decision in 1954, made clear that medical processes are patentable. Since then thousands of patents have issued for medical processes.

Eliminating patent protection for medical processes would not only deviate from a long history of administrative and judicial decisions on the patentability of such processes, it would also be inconsistent with Congress's clear intent. Under the Hatch-Waxman Act, Congress has expressed its clear intent that these processes be patentable. It has, for example, provided for patent term extensions for patents covering a "method of using" a drug product, 35 U.S.C. § 156(a). Furthermore, both at the beginning and the end of the twentieth century, Congress decided not to enact legislation that would have restricted the patentability of medical processes. On the second occasion, Congress instead enacted a statute that balanced the interests of physicians and of inventors by immunizing physicians from the remedy provisions of the patent laws when they infringe certain method patents but not when they infringe patents for new uses of pharmaceuticals. Congress did not change the scope of patentability at all. Congress thus made clear that medical processes remain patentable.

That makes sense in light of the goal of the patent laws to promote the useful arts. Given the high cost, length and uncertainty of pharmaceutical development, there is a consensus that, in the absence of patent protection, there would be a significant reduction in development of new uses for existing pharmaceuticals, as well as other innovations in medical processes. Thus, it is critical that this Court interpret § 101 in a manner that protects patents for medical processes, particularly new uses for existing pharmaceuticals.

ARGUMENT

I. This Court Should Not Adopt a New Test for the Boundaries of § 101.

This Court has repeatedly made clear the breadth of the patent law and the bounds of patentability, excluding from the scope of patent protection only "laws of nature, natural phenomena, and abstract ideas." *Diamond v. Diehr*, 450 U.S. 175, 185 (1981); *see also Diamond v. Chakrabarty*, 447 U.S. 303, 308-09 (1980). Under these principles, medical-process patents will be generally protected. Any medical process that makes use of pharmaceuticals, for example, will come within the scope of § 101, because the pharmaceutical is not a law of nature, natural phenomenon or abstract idea.[3] There is no need for further limits. The existing limits can be applied flexibly, consistent with the statutory language, to carry out the goals of the patent law.

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[3] In some cases, under this approach, there may be debate about whether a particular medical process that does not use pharmaceuticals is patentable. Justice Breyer applied such an approach in his dissent in *Laboratory Corp. of America Holdings v. Metabolite Laboratories, Inc.*, 548 U.S. 124 (2006) (Breyer, J., dissenting). PhRMA does not here take a position on whether Justice Breyer's dissent was correct on the facts of that case. But it is clear that under this approach, processes that use pharmaceuticals should be protected. However, at least one court has interpreted Justice Breyer's interpretation of this Court's case law to suggest otherwise. *See infra* n.5. The risk of a lower court misinterpretation that overly restricts the scope of § 101 will only be magnified if a new and more uncertain test is grafted onto existing limits to the scope of processes that are patentable.

In contrast, any additional test designed to narrow the scope of § 101 risks changing the focus in future cases from the purpose of the patent law to formalistic debates on the meaning of a specific court-created test. For example, while the Federal Circuit's *Bilski* test, properly understood, will protect critical medical processes that make use of pharmaceuticals, there is a significant risk that courts will not interpret it to do so. Under the Federal Circuit's test, process patents are protected if they operate on a machine or transform matter. *See, e.g., In re Bilski*, 545 F.3d 943, 962 (Fed. Cir. 2008).[4] Because patents for the use of pharmaceuticals involve transformation of the pharmaceuticals themselves, as well as the patient, PhRMA believes that such patents come within the scope of § 101 under the Federal Circuit's test.

Nonetheless, there is some debate about this. In a case currently pending in the Federal Circuit, *Prometheus Laboratories, Inc. v. Mayo Collaborative Services*, No. 2008-1403, Mayo Collaborative Services argues that even in a case involving administration of a drug for diagnostic purposes that results in production of metabolites within the body, there is no requisite transformation within the meaning of *Bilski*.[5] Brief of Appellees at 32-36 (Mar.

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[4] The Federal Circuit purports to derive its test from this Court's case law, but, what this Court had made clear is that processes that use a machine or transform matter are patentable. *See, e.g., Diehr*, 450 U.S. at 184. This Court has never held that processes that do not use a machine or transform matter are excluded from patentability.

[5] The patents at issue in *Prometheus* concern techniques to relieve pain for those suffering from Crohn's disease and other

30, 2009). Moreover, there is some question as to whether medical processes that do not use pharmaceuticals are "transformative" in the requisite sense even though, as shown below, Congress clearly intends them to be patentable.

Thus, if the Federal Circuit's test is upheld by this Court, there is cause for concern that later cases will devolve into technical debates on the meaning of "transformation," divorced from the goals of the patent law and from Congress's clear intent to ensure the protection of medical-process patents. In

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debilitating diseases of the digestive system. As the district court construed the claims, each claim involved the step of administering the drug and determining metabolite levels, which were not naturally occurring compounds, for diagnostic purposes to evaluate an adjustment in dosage. Prior to the Federal Circuit's decision in *Bilski*, the district court held these claims unpatentable, without applying the transformation test, based on its interpretation of Justice Breyer's dissenting opinion in *Metabolite*, 548 U.S. at 125 (Breyer, J., dissenting).

The district court's opinion evidences the risks of misapplication even of the current limits of § 101, as interpreted by Justice Breyer. In *Metabolite*, the homocysteines that were measured were naturally occurring. In contrast, in *Prometheus*, the metabolites measured were the result of administration of a non-naturally occurring pharmaceutical, which is neither an abstract idea nor a natural law and the use of which inherently limits the scope of the patent. Moreover, the district court ignored that the pharmaceutical administered was transformative, which under this Court's case law, should have made clear the process was protected. The district court's opinion thus shows how even the current limits on § 101 can be misapplied to limit unduly the scope of patent protection. Grafting additional limits on top of those will simply multiply those risks.

other words, the test adopted, whether the Federal Circuit's test or some variant, may become talismanic, with arguments focused on the terms of the test rather than on the terms used by, and purposes of, Congress. This Court should retain the focus on Congress's words and purpose.

If this Court nonetheless adopts the Federal Circuit's *Bilski* test, it should make clear either that (1) under that test, medical processes, particularly processes involving the administration of pharmaceuticals, are patentable, or (2) the test is limited to business method patents and other tests may be appropriate for medical-process or other patents. Alternatively, if this Court adopts a different approach to the scope of § 101 than the Federal Circuit adopted in *Bilski*, it should ensure that that test protects the patentability of medical-process patents.

II. Patents for Medical Processes Have Long Been Protected

The patent laws have long protected the patenting of medical processes, such as the process of using a particular drug for treatment. The Patent Act itself always protected the patenting of processes and made no exception for medical processes.[6] Early patents for medical processes included (1) patent 4,848, issued in 1846 for surgical anesthesia with ether, (2) patent 58,034, issued in 1866 for an improved method of curing rheumatism, (3) patent

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[6] The Patent Act of 1793 used the term "art," which Congress replaced with the term process when it enacted the current version of § 101 in 1952. *See Bilski*, 545 F.3d at 951 n.4.

65,044, issued in 1867 for an improved method of treating affection of the skin, (4) patent 506,449, issued in 1893 for a method of treating diseases electrically, (5) patent 2,008,526, issued in 1935 for treating hepatomegaly with electrical current, and (6) patent 2,322,245, issued in 1943 for a method of transcutaneous injection.

While the Patent Act on its face always encompassed medical processes, there was a period of time when judicial decisions cast some doubt on the patentability of such processes. In 1862, in *Morton v. New York Eye Infirmary*, 17 F. Cas. 879 (C.C.S.D.N.Y. 1862) (No. 9,865), the New York Circuit Court rejected a patent for the use of ether, a known agent, as an anesthetic, because the patent was for a new effect for a well-known process of inhaling ether. However, some interpreted *Morton* as broadly holding that medical treatments were not patentable processes. In *Ex parte Brinkerhoff*, the Commissioner of Patents adopted such reasoning as one basis for rejecting the patent at issue, explaining that "[t]he methods or modes of treatment of physicians of certain diseases are not patentable." 24 Dec. Comm'r 349 (1883), *republished in New Decisions*, 27 J. Pat. & Trademark Off. Soc'y 797, 798 (1945). His rationale was that the result of any method of treatment was uncertain. *Brinkerhoff* was affirmed on a technicality, but the appeals court left open "the question of how far patents can 'invade the right of protecting health.'" William D. Noonan, *Patenting Medical and Surgical Procedures*, 77 J. Pat. & Trademark Off. Soc'y 651, 654 (1995).

Whatever the implications of *Brinkerhoff*, patents for medical processes continued to be granted. *See supra*, at 9. Moreover, in the 1930s, both courts and the Board of Patent Appeals upheld patents for medical processes. In *Dick v. Lederle Antitoxin Laboratories*, 43 F.2d 628, 630 (S.D.N.Y. 1930), the court rejected arguments that a method of operating by injecting toxin into a person was not patentable. Similarly, the Board of Patent Appeals found patentable methods for shrinking living tissue, *Ex parte Wappler*, 26 U.S.P.Q. (BNA) 191 (Pat. Off. Bd. App. 1935), and for producing fever in the human body, *Ex parte Kettering*, 35 U.S.P.Q. (BNA) 342 (Pat. Off. Bd. App. 1936).

Subsequently, the Board of Patent Appeals cleared up any lingering confusion and made explicit that medical processes are patentable. In *Ex parte Scherer*, 103 U.S.P.Q. (BNA) 107 (Pat. Off. Bd. App. 1954), the Board upheld a patent claim for a method of using a fluid jet, instead of a hypodermic needle, to inject fluid into the human body. The Board held that it was irrelevant that the usefulness of the claim depended on the reaction of the human body, explaining that "[t]here is nothing in the patent statute which categorically excludes such methods, nor has any general rule of exclusion been developed by decisions." *Id.* at 110. The Board noted that "[c]laims involving treatment of the human body have been allowed on appeal." *Id.* at 109-10 (citing *Wappler* and *Kettering*). The Board distinguished both *Morton* and *Brinkerhoff*, suggesting that the *Brinkerhoff* case was based on double patenting and that the additional reasoning of *Brinkerhoff* did not justify categorical rejection of patents for medical methods:

> The only specific reason given is uncertainty of results, which does not appear to be a valid reason for categorically refusing all methods, and which reason is more properly considered under the question of utility which is a separate and distinct requirement for patentability. To the extent that *Ex parte Brinkerhoff* holds or implies that all medical or surgical methods are unpatentable subject matter merely because they involve treating the human body, that decision is expressly overruled.

Id. at 110. Since *Scherer*, patents for medical procedures have been routinely granted. *See* Noonan, 77 J. Pat. & Trademark Off. Soc'y, at 658-70, tbl. 1 (listing representative medical method patents). Courts, including the Federal Circuit, have routinely upheld such patents. *See, e.g.*, *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223, 1225-26, 1230 (Fed. Cir. 1994) (upholding against an inventorship challenge patents for use of AZT to treat HIV). It would be a radical departure, indeed, if this Court were to adopt a test that called into question the patentability of such inventions.

III. Congress Balanced Competing Policy Concerns and Concluded that Patents for Medical Processes Should Be Protected.

Congress has effectively ratified the longstanding administrative and judicial interpretation that medical processes are patentable under § 101. Indeed, not only is Congress aware of this longstanding policy, Congress has made clear that it believes such processes are and should be patentable. For example, under the Drug Price Competition and Patent Term Restoration Act of 1984 ("Hatch-Waxman Act"), Pub. L. No. 98-417, 98 Stat. 1585 (1984), Congress specifically required all applicants to the Food and Drug Administration for approval of a new drug to list any patents related to the drug, including any patent "which claims a method of using such drug."[7] 21 U.S.C. § 355(b)(1). Subsequently, applicants must provide supplemental information when any new patents issue, including new patents on methods of use. *Id.* § 355(c)(2). Lest there be any doubt that Congress intended new methods of use to be patentable, the Hatch-Waxman Act provides, under certain conditions, for patent term extensions both for a "method of using a [drug] product" and for a "method of manufacturing a [drug] product." 35 U.S.C. § 156(a); *see also id.* § 156(f) (defining "product" to include drug products). Obviously, Congress would not have passed these provisions if it did not intend for these processes to be patentable.

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[7] Information about these patents is then published as part of the FDA's *Approved Drug Products with Therapeutic Equivalence Evaluations*, commonly referred to as the "Orange Book."

Moreover, on multiple occasions, Congress considered but did not pass legislation that would have excluded medical and surgical methods and devices from the field of patentable subject matter. The 57th and 58th Congresses considered such legislation in 1902 and again in 1904. H.R. 12451, 57th Cong. (1902); H.R. 13679, 58th Cong. (1904). At the time, the Report of the House Committee on Patents noted that it had been the practice of the Patent Office to grant such patents and further noted that the state of the law on patenting therapeutic methods was unsettled. *See* Noonan, 77 J. Pat. & Trademark Off. Soc'y at 654. Congress did not pass this legislation. *See id.*

In the 1990s, Congress again considered and rejected legislation to eliminate medical processes from the scope of patent protection. Instead, Congress immunized doctors from lawsuits for infringing a subset of these patents -- a subset that does not include patents for processes for the use of particular pharmaceuticals. By doing so, Congress made clear its understanding that medical-process patents are within the scope of § 101.

In particular, on March 3, 1995, Congressman Greg Ganske introduced H.R. 1127, which would have precluded the issuance of a patent for any medical procedure that did not use a patentable product. H.R. 1127, 104th Cong. (1995). A companion bill in the Senate, introduced on October 18, 1995, rather than precluding the patenting of medical processes, sought to redefine what would constitute infringement of patents for medical processes. S. 1334, 104th Cong. (1995). This bill would have defined activities by medical professionals as non-infringing even if they made use of patented processes. *Id.*

These bills were drafted as a result of a controversy over a lawsuit by one physician against another for purportedly infringing a patent on a method of cataract surgery (the "Pallin case," *see Pallin v. Singer*, 36 U.S.P.Q.2d (BNA) 1050 (D. Vt. 1995)). *See* 142 Cong. Rec. 26825-26 (1996) (statement of Sen. Frist). Doctors became concerned that they would be sued for using particular surgical procedures. Arguably, this concern was vastly overblown. Although medical-process patents had been extant for decades, the Pallin case has been cited as the first of its type to go to trial. Todd Martin, *Patentability of Methods of Medical Treatment: A Comparative Study*, 82 J. Pat. & Trademark Off. Soc'y 381, 405 (2000).

In any event, Congress ultimately did not respond to the Pallin case by reducing the scope of patentability or declaring physician actions to be non-infringing. Indeed, neither bill attracted broad support. *See* Richard P. Burgoon, Jr., *Silk Purses, Sows Ears and Other Nuances Regarding 35 U.S.C. § 287(c)*, 4 U. Balt. Intell. L.J. 69, 80 (1996). Instead, after the House held hearings on the proposed bills, *Medical Procedures Innovation and Affordability Act and Inventor Protection Act of 1995: Hearing Before the Subcomm. on Courts and Intellectual Property of the H. Comm. on the Judiciary*, 104th Cong. (1995)

[hereinafter *Hearing on H.R. 1127*], Congress took a more nuanced approach. Under the enacted legislation, medical processes remain patentable, infringers other than medical professionals are subject to suit and award of remedies, and medical professionals who use patented processes are still deemed to infringe.

Instead of changing the scope of patentability, Congress protected the interests of medical professionals by exempting them, with important exceptions, from the remedial provisions of the patent laws when they are performing a medical activity.[8] Even this exemption does not apply to new uses of pharmaceuticals. That is because the statute excludes from the definition of "medical activity," and thus from the immunity provision, the following: "(i) the use of a patented machine, manufacture, or composition of matter in violation of such patent, (ii) the practice of a patented use of a composition of matter in violation of such patent, or (iii) the practice of a process in violation of a biotechnology patent." 35 U.S.C. § 287(c)(2)(A).[9]

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[8] *See* 35 U.S.C. § 287(c)(1) ("With respect to a medical practitioner's performance of a medical activity that constitutes an infringement under section 271(a) or (b) of this title, the [remedial] provisions . . . of this title shall not apply against the medical practitioner or against a related health care entity with respect to such medical activity."). The statute does not immunize the activities of persons involved in the commercial development, manufacture, sale, importation, or distribution of drugs, devices, biotechnology products, or the provision of pharmacy or clinical laboratory services (other than clinical laboratory services provided in a physician's office). *See* 35 U.S.C. § 287(c)(3).

The exception for use of "a composition of matter" means that Congress concluded that medical practitioners remain subject to the remedial provisions of the patent law when they violate patents for new uses of pharmaceuticals. According to the Conference Report, "'Uses of compositions of matter' include, without limitation, novel uses of drugs, . . . novel methods of combining drug therapies, and novel methods for providing genetic or other biological materials to a patient (including gene therapies)." H.R. Rep. No. 104-863, at 853 (1996) (Conf. Rep.). The report gives two examples of situations where doctors would not be immunized: (1) "a claim that recites only the novel use of a drug for the treatment of diabetes that involves the administration of a drug at a particular time of day and/or at a specified dose and/or with a specified concomitant medicinal therapy," and (2) a claim for a method of transplant surgery that uses a novel anesthetic or a novel dosing schedule for that anesthetic. *Id.* at 853-54.[10] Thus, new regimens for administering a drug and new uses for a drug are both subject to full protection.

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[9] With respect to patented processes that use a composition of matter, the statute further states that "the term 'patented use of a composition of matter' does not include a claim for a method of performing a medical or surgical procedure on a body that recites the use of a composition of matter where the use of that composition of matter does not directly contribute to achievement of the objective of the claimed method." 35 U.S.C. § 287(c)(2)(F). In other words, if a patented process merely adds a reference to a drug or other composition of matter for no reason other than, for example, to circumvent the immunity provisions, the immunity provisions are still applicable.

In explaining the foregoing legislation, which he had introduced, Senator Frist contrasted "innovations in pure procedures -- such as discovery of a better way to suture a wound or set a broken bone" with "innovations in medical drugs and devices." 142 Cong. Rec. 26825 (1996) (statement of Sen. Frist). He explained that enforcement against doctors of patents claiming "pure procedures" would be disastrous, and innovations in these areas would happen without "the midwifery of patent law." *Id.* But because of the need to recoup investments, "[t]he appropriateness and importance of allowing patents for pharmaceuticals and medical devices is now well-established." *Id.* He noted that the Ganske amendment proposed in the House "could have impacted many worthwhile patents in biotechnology and pharmacology."[11] *Id.* In contrast, the legislation Senator Frist proposed, "would in no way, however, change patent law with respect to biotechnology, medical devices, drugs, *or their methods of use.* As a result, this narrowly tailored legislation would in no way discourage the important research being done in these areas of medicine." *Id.* (emphasis added). The legislation Senator Frist proposed was adopted with slight alterations in the Conference Committee.[12]

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[10] Use of compositions of matter does not include uses of medical devices or other machines. *See id.*

[11] After the initial legislation he proposed in the House, Congressman Ganske proposed an amendment that was similar to his original proposal except that it exempted from the proposed changes patents "for a new use of a composition of matter or biotechnological process." H.R. 3814, 104th Cong. § 619 (1996) (as passed by House, July 24, 1996). So even the amendment Senator Frist criticized as inadequately protecting patents related to pharmaceuticals had already exempted compositions for new uses of pharmaceuticals.

In enacting this legislation, Congress thus balanced competing policy objectives. While it protected medical practitioners from lawsuits based on claimed advances in "pure procedures" such as surgical techniques that might not require substantial investments to develop, Congress did not permit medical practitioners to use patented processes that make use of pharmaceuticals, or similar inventions that require substantial investment. And it decided not to reduce the scope of patentability for any medical processes.

Under this Court's case law, when Congress amends a statute without "casting doubt" on administrative or judicial interpretation, that is evidence of its ratification of the interpretation. *See Edelman v. Lynchburg College*, 535 U.S. 106, 117-18 (2002). That principle applies even more clearly here where Congress amended the statute in a way that itself makes clear its adoption of the administrative and judicial interpretation that medical processes are patentable and where Congress in a separate statute, the Hatch-Waxman Act, further demonstrated its agreement with this interpretation. This Court should respect Congress's clear intent.

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[12] Even in this form the legislation drew strong objections. For example, Senator Orrin Hatch (R-Utah), Chairman of the Senate Judiciary Committee (which has jurisdiction over patent matters), wrote in a letter to the Senate Majority Leader that the section "constitutes a significant departure from principals of American patent law that have been on the books for over two hundred years. The amendment would preclude a certain class of patent-holders from enforcing their patent rights against infringement, a change that renders these patents virtually meaningless." *See* 142 Cong. Rec. 26640 (1996).

IV. The Purpose of Patent Law Requires Protection of Medical-Process Patents.

There is an additional reason why this Court should take care to assure the continued patentability of medical processes. Such patentability serves the primary purpose of patent law: to advance the useful arts by providing an incentive for innovations. *Chakrabarty*, 447 U.S. at 307; U.S. Const. art. I, § 8, cl. 8. That is particularly true for processes that make use of pharmaceuticals. Patenting new uses for existing products has been an established part of patent law since the Patent Act of 1952, Act of July 19, 1952, Ch. 950, 66 Stat. 792. *See* 35 U.S.C. § 100(b); *Rohm & Haas Co. v. Roberts Chems., Inc.*, 245 F.2d 693, 699 (4th Cir. 1957). Such patents are critical to the advancement of medical care.

Today, much of the innovation in medical care comes from intensive study of possible new uses for existing drugs. Calfee, *The Golden Age of Medical Innovation*, *supra*. As one article points out in discussing the June 2007 annual meeting of the American Society of Clinical Oncology, "[w]hereas breakthrough advances in new, targeted therapies stole headlines at recent years' gatherings, the current highlights are studies showing improved uses for . . . established drugs." Catherine Arnst, *Same Cancer Drugs, New Applications*, Bus. Week Online, June 3, 2007, *at* http://www.businessweek.com/technology/content/jun2007/tc20070603_510760.htm. For example, Herceptin, which was originally approved for one use, was subsequently found, when administered after surgery, to reduce the odds of a recurrence of a type of breast cancer *by half*, suggesting, according to the *New England Journal of Medicine*, "a dramatic and perhaps permanent perturbation of the natural history of the disease, maybe even a cure." Calfee, *The Golden Age of Medical Innovation*, *supra* (describing studies in the *New England Journal of Medicine* and the British medical journal, *The Lancet*).

Patents issued for processes that make use of already-known products include "the use of AZT to treat AIDS, the application of minoxidil to treat baldness, the administration of a known sugar solution (mannitol) to get drugs into the brain, and the use of a cough medicine (dextromethorphan) to help stroke victims." *Hearing on H.R. 1127*, *supra*, at 67 (prepared testimony of William D. Noonan, M.D., Klarquist, Sparkman, Campbell, Leigh and Whinston). In these cases, the product itself is not patentable (or has already been patented), because it is already known. "The practice has therefore been to patent as a 'useful process' the use of a known drug for a recently discovered purpose." Andres Rueda, *Cataract Surgery, Male Impotence, Rubber Dentures and a Murder Case -- What's so Special About Medical Process Patents?*, 9 U. Balt. Intell. Prop. L.J. 109, 146 (2001). The patentability of medical processes provides an incentive for researching the new use.

The need for the incentives provided by the patent system also extends to personalized medicine, which seeks to individualize treatment for patients. It does so by identifying genetic, genomic, and clinical information which is translated into precise diagnostic tests and targeted therapies that address a person's susceptibility of developing disease, the course of disease, and its response to treatment. Personalized medicine will allow physicians to make the most effective clinical decisions for individual patients and has the potential to improve drug efficiency, lower costs from adverse events through more targeted therapies, and save lives.[13] "[T]argeted drug therapies selected for individual patients based on genetic predisposition" will allow doctors to guide "medication selection and dosage regimens that ensure maximal drug efficiency and minimal adverse drug reaction." Teresa Kelton, *Pharmacogenomics: The Re-Discovery of the Concept of Tailored Drug Therapy and Personalized*

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[13] For example, one early success in personalized medicine involves the measuring of HER2/neu amplification in breast cancer patients. Michael J. Shuster & Pauline Farmer-Koppenol, *Protecting Patents for Personalized Medicine*, BioPharm Int'l (Sept. 1, 2008), *available at* http://biopharminternational.findpharma.com/biopharm/article/articleDetail.jsp?id=545358. For those patients whose tumors carry this amplification, the drug Herceptin reduces risk or recurrence by half. *Id.* For those patients whose tumors do not carry this amplification, the product does not have the same benefit.

Medicine, 19 Health Law. 1, 1 (2007). However, "[i]n order for personalized medicine to become a reality, drug innovators will need a regulatory environment that allows a return on their investments in research and development." Deloitte Consulting LLP, Avoiding No Man's Land: Potential Unintended Consequences of Follow-On Biologics 17 (Mar. 2009).

The development of a new medicine, or a new use for an existing medicine, is extremely expensive. Because of the difficulty of developing new medicines and the high safety and effectiveness standards that they must meet, relatively few research avenues are successful. Only 20 in 5,000 compounds that are screened enter preclinical testing in laboratories and on animals. FTC, To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy, ch. 3, at 6 (Oct. 2003), *available at* http://www.ftc.gov/os/2003/10/innovationrpt.pdf. Even if a compound is determined to be safe enough to test on humans, there must be three phases of clinical testing to determine safety and efficacy before the FDA can give final approval for marketing. *Id.* As a result, the development and commercialization of a drug is a very lengthy and uncertain process, often taking more than a decade. *See* Joseph A. DiMasi & Henry G. Grabowski, *The Cost of Biopharmaceutical R&D: Is Biotech Different?*, 28 Managerial & Decision Econ. 469, 475-76 (2007). Because of this lengthy and difficult process, the average cost of bringing a new drug to market is approximately $1.3 billion when the cost of unsuccessful efforts is taken into account. *See* U.S. Dep't of Commerce, Int'l Trade Admin., *Pharmaceutical Price Controls in OECD Countries*, *supra*, at 30-31. And this cost must be recouped in a patent term that is often effectively much shorter than the statutory term because of the length of the review and approval process. FTC, To Promote Innovation, *supra*, ch. 3, at 7 (explaining that "the effective patent life for a drug patent -- even with patent term restoration [under the Hatch-Waxman Act] -- is typically about 11 years, substantially shorter than the 20-year statutory patent term" (footnote omitted)). Even drugs that make it to market do not generally cover their development costs. *See id.*, ch. 3, at 5 (reporting on statements from PhRMA).

Because of the expense and difficulty of developing pharmaceuticals, patent protection is crucial. As a Federal Trade Commission report explained after gathering evidence on the costs and benefits of patent protection, "[p]articipants in the Hearings overwhelmingly expressed the view that patent rights for pharmaceuticals are essential for brand-name companies to prevent free riding and recoup their significant investments." FTC, To Promote Innovation, *supra*, ch. 3, at 9. Indeed, "pharmaceutical industry participants reported that 60% of inventions would not have been developed and 65% would not have been commercially introduced absent patent protection." *Id.*, ch. 2, at 11 (citing Edwin Mansfield, *Patents and Innovation:*

An Empirical Study, 32 Mgmt. Sci. 173, 175 (1986)).[14]

There are no significant countervailing considerations. Some have argued that particular patents have too broad a preemptive effect, a concern expressed by Justice Breyer in *Metabolite.* 548 U.S. at 126-28. These concerns do not apply to most pharmaceutical patents. First, patents on uses of *particular* pharmaceuticals are inherently limited in scope. Second, the complexity of biological systems means there are generally multiple pathways for understanding and treating most diseases.[15] Third, patent law itself imposes significant limits on the breadth of patents, and these requirements are applied far more rigorously in the biomedical area than elsewhere.[16] Finally, to the extent broad patents are issued and not licensed, there is a substantial economic literature suggesting that society nevertheless benefits because "innovation would drop substantially in the pharmaceutical industry in the absence of effective patent protection." *See* Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 Va. L. Rev. 1575, 1615-17 (2003) (explaining that the prospect theory, that patents should be broad, stand alone, and confer almost total control "maps most closely onto invention in the pharmaceutical industry"); *see also* James W. Hughes et al., "Napsterizing" Pharmaceuticals: Access, Innovation, and Consumer Welfare (Nat'l Bureau of Econ. Res., Working Paper No. 9229, 2002) (finding that eliminating patent

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[14] In addition to providing incentives for invention, patent protection also helps ensure quick disclosure of inventions that do occur. *See Scott Paper Co. v. Marcalus Mfg. Co.,* 326 U.S. 249, 255 (1945). The PTO reports that as a result of the American Inventor Protection Act of 1999, Pub. L. No. 106-113, 113 Stat. 1501, 1501A-552, "roughly 90 percent of all pending patent applications are published at eighteen months." FTC, To Promote Innovation, *supra,* ch. 1, at 26. In the absence of patent protection, however, inventors would have no incentive to disclose their invention until after completion of the lengthy FDA approval process. And even then they would only be required to disclose the use, not the underlying research. This is important in the pharmaceutical industry. The FTC cited testimony from pharmaceutical and biotech representatives, including those from generic pharmaceutical firms, explaining that patent disclosures guide efforts to design around patents and lead to other efforts at innovation. *Id.*, ch. 3, at 1-2, 4.

[15] *See, e.g.,* David E. Adelman, *A Fallacy of the Commons in Biotech Patent Policy,* 20 Berkeley Tech. L.J. 985, 1010-17 (2005); John P. Walsh et al., *Effects of Research Tool Patents and Licensing on Biomedical Innovation, in* Patents in the Knowledge-Based Economy 285, 292, 304-05 (Wesley M. Cohen & Stephen A. Merrill eds., 2003). Indeed, many of the recent drugs with multiple new uses have quickly spawned competitor

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drugs with similar characteristics. Calfee, *The Golden Age of Medical Innovation*, *supra*.

[16] *See, e.g.*, Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 Va. L. Rev. 1575, 1590 (2003) (noting that biopharmaceutical and biotech patent prosecution takes a much longer time than does the prosecution of patents in other fields); Noonan, 77 J. Pat. & Trademark Off. Soc'y at 661 ("[T]he requirement that an invention must be a 'nonobvious' advance to be patentable is particularly strictly applied in all the biological examining groups. The likelihood that a biological patent application will successfully issue as a patent is about one-half of the likelihood of success in conventional mechanical and electrical cases. Many biological patents that emerge from this rigorous patenting process are narrow in scope, difficult to enforce, and unlikely to cover anything that will be widely or successfully used in practice.").

protection on pharmaceuticals would cost future consumers three dollars in lost innovation benefits for every dollar saved in reduced drug prices).

Even scholars who advocate narrow patent rights in some contexts, recognize the importance of patent rights for biopharmaceutical patents. One such scholar explains:

> In the specific context of the biopharmaceutical industry, the claim that broad, monopoly-conferring rights on nascent invention can provide a necessary spur to further innovation may well have merit. As matters currently stand, the research path from initial discovery of a potentially relevant DNA sequence or receptor to identification of a drug that is ready for clinical testing can be quite risky, lengthy, and expensive.

Arti K. Rai, *Fostering Cumulative Innovation in the Biopharmaceutical Industry: The Role of Patents and Antitrust*, 16 Berkeley Tech. L.J. 813, 828-29 (2001).

Even among physicians, who historically have had concerns about patents that limit products used in, or processes of, treatment, "there seems to be general agreement that drugs and medical devices should be patentable, because they often require enormous expenditures." Noonan, 77 J. Pat. & Trademark Off. Soc'y at 656.[17] Thus, there is broad consensus on the importance of patent rights to pharmaceutical development. *See, e.g.*, Natasha N. Aljalian, *The Role of Patent Scope in Biopharmaceutical Patents*, 11 B.U.J. Sci. & Tech. L. 1, 47 (2005) ("The promise of full patent rights for successful discovery is important motivation for inventors entering the unpredictable, competitive biopharmaceutical area."); John P. Walsh et al., *Effects of Research Tool Patents and Licensing on Biomedical Innovation, in* Patents in the Knowledge-Based Economy 285, 286-87 (Wesley M. Cohen & Stephen A. Merrill eds., 2003) ("There is widespread consensus that patents have long benefited biomedical innovation. A forty-year empirical legacy suggests that patents are more effective, for example, in protecting the commercialization and licensing of innovation in the drug industry than in any other.").

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[17] Any continued criticism of patents for medical processes has generally been directed to patents for surgical techniques and

The need for patent protection for new uses ("indications") for existing drugs is just as great as the need for patent protection of the initial product. Even in Europe, where the law is more restrictive and generally precludes patenting of methods of medical treatment, the law permits patenting of known products for new medical uses. Martin, 82 J.

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research tools. The American Medical Association, for example, which once took the view that patenting of surgical instruments was unethical, later reversed itself. *See* Martin, 82 J. Pat. & Trademark Off. Soc'y at 388-89. And while it continues to oppose process patents for surgical techniques, it signed on to the approach Congress took in its 35 U.S.C. § 287, as Senator Frist explained in his floor speech. *See* 142 Cong. Rec. 26825 (1996) (statement of Sen. Frist). That approach eliminated any problems with patenting of surgical techniques.

Pat. & Trademark Off. Soc'y at 396. As discussed above, news uses for existing drugs make up a critical part of medical research. As of 2007, 47 percent of biologics that were evaluated in one study have had at least one new FDA-approved indication after the initial approval. *See* Said et al., *Continued Development of Approved Biological Drugs*, *supra*, at 3.[18]

Like development of the initial product, development of new uses is costly and time consuming. As one author explains: "A substantial amount of laboratory research conducted by pharmaceutical companies involves the expensive and painstaking evaluation of known drugs and compounds for unknown curative properties." Rueda, 9 U. Balt. Intell. Prop. L.J. at 146 (*citing The*

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[18] Other types of medical-process patents are also important. For example, there are important patents on methods for diagnosis and optimization with respect to individual patients. Standard drug treatments have only a 25% rate of efficacy in cancer patients in part because each patient is biologically unique. *See* Mara G. Aspinall & Richard G. Hammermesh, *Realizing the Promise of Personalized Medicine*, Harv. Bus. Rev., Oct. 2007, at 108, 111 (citing Brian B. Spear et al., *Clinical Application of Pharmacogenetics*, 7 Trends in Molecular Med. 201 (2001)). Determining optimal treatments can be costly. *See* Peter Huber, *Who Pays for a Cancer Drug?*, Forbes, Jan. 12, 2009, at 72. Patent protection provides a key incentive for development of such methods of optimization. Patents in this area include U.S. Pat. No. 7,348,149 (Mar. 25, 2008) ("Methods of Diagnosing Parkinson's Disease"); U.S. Pat. No. 6,770,029 (Aug. 3, 2004) ("Disease Management System and Method Including Correlation Assessment"); U.S. Pat. No. 6,087,090 (July 11, 2000) ("Method for Predicting Drug Response").

FDA Approval Process: Hearing Before the Health and Environment Subcomm. of the H. Commerce Comm., 104th Cong. (1996)). One reason the work on new indications is expensive is that just like with the initial indication, in order to obtain FDA approval for a new indication, the innovator must submit data from clinical trials regarding the treatment's safety and efficacy in a particular patient population.

The FDA review and approval process is also lengthy. In 2007, the Boston Consulting Group conducted an analysis of 58 biologics consisting of biotechnology-derived protein products that were approved under the Public Health Service Act between 1986 and 2006. Said et al., *Continued Development of Approved Biological Drugs, supra*, at 2. It found that FDA review of a new indication for an existing biologic typically takes three to six years. *Id.* at 5. Companies whose products are approved typically accrue significant expenses even after FDA approval, including research on new indications and studies that are the subject of commitments made to FDA for post-approval research. As a result of factors such as these, development of new indications for existing drugs is very costly: while "[n]o comprehensive estimates currently exist that capture the full extent of investment occurring after the initial approval, . . . considering that the size and the complexity of the clinical trials for each new indication are similar to the size and the complexity of those conducted prelaunch and that the failure rates remain high, such costs are likely high and represent an important part of the overall R&D

investment in researching and developing new therapeutic biologics." *Id.* at 6. Because of the substantial expense of developing new indications, the Boston Consulting Group concluded that patent protection is important to promoting the development of new indications. *Id.*

Of course, a company that owns a patented product already has some incentive to research additional indications for that product. But that incentive often will not be sufficient because by the time the new indication is approved little or no time may be left in the patent protection for the product. The Boston Consulting Group found that one-third of the new indications were approved more than seven years after the approval of the initial indication. *Id.* at 3. And often it takes much longer. Biologics on the market for 11 years are still expected to have on average one additional indication approved over the remainder of their lifetime. *Id.* at 4.

Moreover, new uses for existing products may be developed by companies *other* than the original innovator; companies that have no patent protection over the product. They may also be developed using products never subject to patent protection or no longer subject to such protection. For example, the patents for the use of AZT to treat human immunodeficiency virus (HIV) constituted new use of a well-known composition.[19] *See Burroughs*

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[19] AZT was originally developed in 1964 as a potential cure for cancer. The inventor never sought a patent because tests showed that it "failed miserably" at its intended purpose. *See* Philip J. Hilts, *Experimental Drug AZT Was Designed for*

Wellcome, 40 F.3d at 1225-26, 1230 (describing these patents and fact that the compound AZT was already well known). For these companies, the only patent protection they can receive comes in the form of a patent on a medical process.

Eliminating patent protection would severely restrict medical research. *See* Rueda, 9 U. Balt. Intell. Prop. L.J. at 132 ("A serious concern weighing against stripping medical processes from patent protection is the impact such a move would have on incentives. Without intellectual property protection, companies and individuals who otherwise may have poured time and resources towards medical process research may not do so."). One author, who emphasizes that the greatest gains in medical research are coming from the invention of new indications, explains that "[t]he surest way to hobble medical technology is to damage intellectual property (IP) protections, mainly patents." Calfee, *The Golden Age of Medical Innovation*, *supra*.

CONCLUSION

Given the importance of patent protection to incentivize research, the history of protection of medical-process patents, and Congress's unambiguous intent, this Court should make clear, whatever result it reaches with respect to the Bilski patent, that methods of medical treatment and diagnosis, especially methods for new uses of existing pharmaceuticals, remain patentable. It should not adopt a new test for patentability that risks

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Tumors: Skill, Luck Led to Promising Tests on AIDS, Wash. Post, Sept. 19, 1986, at A11.

changing future cases into formalistic debates on the meaning of the court-created test. If it nonetheless adopts such a test, it should make clear that medical-process patents fall within it.

Respectfully submitted,

OF COUNSEL

DAVID E. KORN
PHARMACEUTICAL
RESEARCH AND
MANUFACTURERS OF
AMERICA
950 F St., N.W.
Washington, D.C. 20004
(202) 835-3400

HARRY J. ROPER
Counsel of Record
JENNER & BLOCK LLP
330 N. Wabash Avenue
Chicago, IL 60611
(312) 222-9350

PAUL M. SMITH
MARC A. GOLDMAN
DAVID Z. MOSKOWITZ*
JENNER & BLOCK LLP
1099 New York Avenue, N.W.
Suite 900
Washington, D.C. 20001
(202) 639-6000

*Admitted in NY only; supervised by principals of the firm

AMICUS
CURIAE
BRIEF

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In the
Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,
v.
JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF FOR PROMETHEUS LABORATORIES INC. AS *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY

RICHARD P. BRESS
Counsel of Record
J. SCOTT BALLENGER
ALEXANDER MALTAS
GABRIEL K. BELL
LATHAM & WATKINS LLP
555 11TH STREET, NW
SUITE 1000
WASHINGTON, DC 20004
(202) 637-2200

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QUESTION PRESENTED

Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

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INTEREST OF *AMICUS CURIAE*

Prometheus Laboratories Inc. ("Prometheus") is a specialty pharmaceutical and diagnostic company committed to developing and commercializing novel pharmaceutical and diagnostic products to help physicians individualize patient care. Prometheus is focused on the detection, diagnosis and treatment of gastrointestinal diseases and disorders in the United States.

Prometheus has a vital interest in the proper interpretation of 35 U.S.C. § 101, the statute at the center of this case. Medical treatment and diagnostic patents, like those held by Prometheus, have become the essential underpinnings of a vibrant and innovative industry that has enormous practical value to ill patients. A ruling in this case that establishes an overly restrictive test under § 101 would stifle innovation and seriously undermine this nascent industry. As a company committed to improving lives through diagnostic and therapeutic innovations that enable doctors to provide optimal care to patients, Prometheus has a unique understanding of the practical and legal considerations relevant to the interpretation of § 101.[1]

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[1] Pursuant to Supreme Court Rule 37.6, Prometheus states that no counsel for any party authored this brief in whole or in part, and no person or entity other than Prometheus made any monetary contribution to the preparation or submission of this brief. Both parties received timely notice of Prometheus's intent to file this brief, and both parties have filed blanket letters of consent.

SUMMARY OF ARGUMENT

The patent at issue in this case claims a business method for hedging risks in the purchase and sale of commodities. The Federal Circuit held that this patent is invalid for failure to satisfy the subject matter requirements of 35 U.S.C. § 101. *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc).

This Court has long recognized that patentable subject matter under § 101 embraces "'anything under the sun made by man.'" *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (citation omitted). The only exception is that "laws of nature, natural phenomena, and abstract ideas" are not patentable and fall outside the scope of § 101. *Diamond v. Diehr*, 450 U.S. 175, 185 (1981). This case concerns the proper scope of that judicially-created exclusion from patentability, and whether the Federal Circuit's "machine-or-transformation" approach to § 101 appropriately captures its contours.

Prometheus does not take a position on whether the patent-in-suit satisfies § 101, nor on whether business methods in general should be patentable. Business method patents have been the subject of withering criticism in recent years, and much of that criticism is fair. Some of the problems with business method patents are related to § 101, as many such patents are drafted in a highly abstract way untethered to specific, real-world applications. Some of the problems have nothing to do with § 101, but arise from the fact that many patents have been granted for business methods that are strikingly obvious and not at all novel.

Prometheus writes here to emphasize that the Court's interpretation of § 101 in this case may have significant ramifications beyond business method patents, including far-reaching effects on the emerging and hugely important field of medical diagnostic and treatment processes. Educational institutions, nonprofit organizations, corporations, and scientists invest hundreds of millions of dollars to uncover correlations between molecular markers in the human body (including genes) and various disease conditions, opening the way to new and highly effective diagnostic and treatment protocols. The PTO has routinely granted patents on these valuable diagnostic and treatment processes and, until recently, they have been upheld without controversy by the Federal Circuit. These foundational patents would be at risk, however, if courts apply the "machine-or-transformation" test in an overly restrictive way. This fear is not hypothetical: the Federal Circuit has already applied its holding below in a restrictive manner to reject—without analysis—medical diagnostic and treatment patents. *Classen Immunotherapies, Inc. v. Biogen IDEC*, 304 Fed. Appx. 866, 867 (Fed. Cir. 2008) (three-sentence unpublished opinion).

The text and history of § 101, and this Court's cases, suggest that the threshold test of § 101 is intended merely to exclude patents on *abstract* principles, as opposed to concrete applications of those principles. Although that line has at times been difficult to draw (in part because any invention can be described and understood at different levels of abstraction), this fundamental distinction runs through and reconciles this Court's jurisprudence in the area. A thoughtful and nuanced application of this distinction will separate unpatentable business methods that rely on abstract or purely mental processes or constructs from patentable medical processes that use correlations or markers in the course of concrete diagnostic and treatment methods that save lives. Nuance and judgment are critical, though, because an overly restrictive interpretation of § 101 driven by dissatisfaction with business method patents may otherwise destroy one of our country's most robust, innovative, and vital industries, and squelch the promise of personalized medicine in its infancy.

ARGUMENT

I. A PROPER UNDERSTANDING OF § 101 WILL ENABLE THIS COURT TO ADDRESS BUSINESS METHOD PATENTS WITHOUT UNDERMINING MEDICAL TREATMENT METHODS

The expansive language of 35 U.S.C. § 101 provides that "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof" is patent-eligible. This Court has "more than once cautioned that 'courts "should not read into the patent laws limitations and conditions which the legislature has not expressed."'" *Diehr*, 450 U.S. at 182 (quoting *Chakrabarty*, 447 U.S. at 308). Accordingly, while the Act's other sections provide stringent requirements for obtaining a patent, such as novelty (§ 102) and non-obviousness (§ 103), courts have consistently interpreted the threshold patentability hurdle of § 101 generously. *See J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124, 130 (2001) ("[T]he language of § 101 is extremely broad.").

At the same time, courts have long recognized that "laws of nature, natural phenomena, and abstract ideas" are not patentable standing alone. *Diehr*, 450 U.S. at 185. But that principle must be approached carefully, because every step of every invention can be expressed as simply a reflection of fundamental principles of physics, chemistry, or other sciences. *See id.* at 189 n.12 ("[A]ll inventions can be reduced to underlying principles of nature[.]"). As Justice Frankfurter recognized, "[e]verything that happens may be deemed 'the work of nature,' and any patentable composite exemplifies in its properties 'the laws of nature.'" *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 134-35 (1948) (Frankfurter, J., concurring).

The exclusion of "natural phenomena" and "scientific principles" has always been limited to *abstract* principles, as distinguished from their concrete applications. As an influential early court explained, a patent cannot claim mere scientific "principles," which are "the first ground[s] and rule[s] for arts and sciences, or in other words the elements and rudiments of them. A patent must be for some new production from those elements, and not for the elements themselves." *Boulton v. Bull*, 2 H. Bl. 463, 485 (C.C.P. 1795); *see also Le Roy v. Tatham*, 55 U.S. (14 How.) 156, 175 (1853) ("A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right.").

A patent therefore may not claim abstract principles like the law of gravity, $E=mc^2$, multiplication tables, the Pythagorean Theorem, the role of oxygen in making fire, electromagnetism, qualities of metals, and

qualities of naturally-occurring bacteria. *See Chakrabarty*, 447 U.S. at 309; *Parker v. Flook*, 437 U.S. 584, 590 (1978); *id.* at 598-99 (Stewart, J., dissenting); *Gottschalk v. Benson*, 409 U.S. 63, 67-70 (1972); *Funk Bros.*, 333 U.S. at 130; *O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 116 (1854); *EMI Group N. Am., Inc. v. Cypress Semiconductor Corp.*, 268 F.3d 1342, 1351 (Fed. Cir. 2001).

On the other hand, concrete applications of fundamental principles have long been patentable. Examples include using time and temperature to cure rubber, genetically engineering bacteria to clean up oil spills, using heat to incubate eggs, using electrical current to transmit voice and sound at a distance, using temperature and pressure to separate molecules, using gravity and puffs of air to separate out flour impurities, using a blast of hot air to improve a smelting furnace, and measuring electrical signals to ascertain the health of a patient's heart. *See Diehr*, 450 U.S. at 188; *Chakrabarty*, 447 U.S. at 310; *Waxham v. Smith*, 294 U.S. 20, 21-22 (1935); *United States v. Am. Bell Tel. Co.*, 128 U.S. 315, 351-52 (1888); *Tilghman v. Proctor*, 102 U.S. 707, 721-22 (1880); *Cochrane v. Deener*, 94 U.S. 780, 784-85 (1877); *Neilson v. Harford*, 151 Eng. Rep. 1266, 1273 (Ex. 1841); *Arrhythmia Research Tech., Inc. v. Corazonix Corp.*, 958 F.2d 1053, 1060-61 (Fed. Cir. 1992). All of those patents relied on natural phenomena and laws for the efficacy of the process, and claimed a statutory monopoly over the practical consequences of those laws in a particular practical setting. The patents were valid, however, because they claimed a concrete process to achieve a tangible result, rather than claiming the underlying scientific principles in the abstract.

Precisely where to draw the line between abstract principles and concrete applications may be challenging in hard cases, but any test must focus on excluding only *abstract* principles. Attempts to wield § 101 beyond that division will risk decimating broad fields of innovation. Essentially any mechanical or chemical process relies for its efficacy on the "correlation" between a human action and its "natural" consequences under scientific laws. This Court's precedents recognize a narrow judicially-created exception to the otherwise sweeping scope of § 101, which prevents anyone from claiming a patent on such scientific laws *in the abstract*. *See Bilski*, 545 F.3d at 1013 (Rader, J., dissenting) ("The Supreme Court stated that all of the transformation and machine linkage explanations simply restated the abstractness rule."). But that exception must be handled cautiously, and construed narrowly, or it will render broad fields of practical innovation unpatentable.

Unquestionably, many business method processes are troubling as a matter of patentability. *See eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 397 (2006) (Kennedy, J., concurring) (noting the "vagueness and suspect validity" of business method patents). Many consist merely of simple methods of organizing basic human affairs, while others strike dangerously close to being purely mental concepts. *See Bilski*, 545 F.3d at 1010 (Mayer, J., dissenting) (noting the patent system has "run amok" with a "'wide variety of non-technological 'inventions' such as arbitration methods, dating methods, tax-planning methods, legal methods, and novel-writing methods'") (citation omitted). However, the crucial lesson from this Court's and the Federal Circuit's interpretations of § 101 is that § 101 presents a poor tool to filter out *all* such inventions that are undeserving of patent protection. First, attempts to apply § 101 as a sweeping filter risk eliminating many broad swaths of genuinely innovative processes for which patent incentives are crucial. Second, a broad role for § 101 is not necessary because many troubling business methods are likely to fail other substantive requirements of patentability, such as novelty and non-obviousness. The bottom line is that applying § 101 to exclude only abstract concepts will preserve patentability for important fields of innovation such as personalized medicine, while filtering out some but not all business methods that are too abstract. Other business methods may be unpatentable for their failure to satisfy the more demanding, substantive requirements of the Patent Act. And those business methods that satisfy all of the Patent Act's filters are likely to be concrete and innovative enough to deserve patent protection.

Prometheus takes no position on whether the Bilski patent is so abstract as to fall outside of § 101. *Compare Bilski*, 545 F.3d at 997 (Newman, J., dissenting) (answering in the negative), *with id.* at 1013 (Rader, J., dissenting) (answering in the affirmative). But the Court should use this opportunity to clarify that § 101 only excludes patents on abstract principles, and does not compel any more searching or restrictive inquiry.

II. AN UNDULY RESTRICTIVE INTERPRETATION OF § 101 COULD STIFLE THE DEVELOPMENT OF MEDICAL DIAGNOSTIC AND TREATMENT TECHNOLOGY

This Court has repeatedly emphasized that "[t]he subject-matter provisions of the patent law have been cast in broad terms to fulfill the constitutional and statutory goal of promoting 'the Progress of Science and the useful Arts,'" and that if restrictions are appropriate they should come from Congress. *Chakrabarty*, 447 U.S. at 315-18 (quoting U.S. Const. art. I, § 8, cl. 8). The Court has also stressed that it has no intention of "freez[ing] process patents to old technologies, leaving no room for the revelations of the new, onrushing technology." *Benson*, 409 U.S. at 71. In deciding whether a patent may cross § 101's broad threshold, the Court has avoided rigid formulaic approaches, in favor of a flexible inquiry that considers whether the process "as a whole, is performing a function which the patent laws were designed to protect." *Diehr*, 450 U.S. at 192.

The principal medical advances of the next century will likely include treatments optimized for individual patients on the basis of genetic or other testing, such as tests that identify correlations between protein levels in the human body and the efficacy of potentially-toxic drugs, or processes that identify genetic markers that make a patient likely to benefit (or not) from a uniquely targeted cancer treatment. Educational institutions, non-profit organizations, corporations and scientists have made significant investments in recent years uncovering the correlations between naturally-occurring genes in the human body and the efficacy of various man-made treatment strategies, opening the way to new and highly effective treatment and diagnostic protocols. These innovations have consistently been held patentable by the U.S. Patent and Trademark Office, and recognized by the Federal Circuit. *See, e.g.*, *Fiers v. Revel*, 984 F.2d 1164, 1166-67, 1172 (Fed. Cir. 1993); *In re Bell*, 991 F.2d 781, 782 (Fed. Cir. 1993). The patentability of such discoveries is vital to enabling innovators to recover the research investment and to continue to invest in future research.

Although the court below acknowledged the need to encourage cutting-edge innovations, *Bilski*, 545 F.3d at 956, it crafted an exclusive "machine-or-transformation test" that, if applied restrictively, would do exactly the opposite. Indeed, the lower court explicitly acknowledged that "future developments in technology and the sciences may present difficult challenges to the machine-or-transformation test" and invited this Court to "alter or perhaps even set aside this test to accommodate emerging technologies." *Id.* Under the Federal Circuit's test, a method is patentable only if "(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing," *id.* at 954, and only provided the machines and transformations are not merely part of "insignificant extra-solution activity," *id.* at 957 & n.14. The court held that this test is the exclusive means for determining whether a method qualifies as a "process" under 35 U.S.C. § 101, or instead preempts an unpatentable natural law or abstract principle. *Bilski*, 545 F.3d at 957.

As the Federal Circuit essentially acknowledged, its machine-or-transformation test derives from cases involving industrial-era processes rather than modern innovation, particularly in the fields of medicine and biotechnology. In theory there is no reason that that test cannot embrace the full scope of modern innovation, so long as its elements are not understood in an inappropriately restrictive way. But if courts read the decision to impose an unduly restrictive interpretation of § 101—as is already happening[2]—it puts the entire field of individualized medicine and treatment methods at risk, for at least three reasons.

First, courts applying the machine-or-transformation test might refuse to treat reactions in the human body as "transformations," and instead view such reactions as unpatentable "naturally occurring" phenomena. Yet, nearly all medical diagnostic and method of treatment patents rely on correlations between markers occurring (naturally or unnaturally) in the human body and disease states or rely on the body's "natural" reaction to the administration of artificial compounds. Indeed, the ultimate purpose of medical treatment is to "transform" a sick patient into a healthy one and such methods have long been thought patentable. *See, e.g., Impax Labs., Inc. v. Aventis Pharms. Inc.*, 545 F.3d 1312, 1314 (Fed. Cir. 2008) (upholding method patent treating Lou Gehrig's disease with riluzole); *Merck & Co. v. Teva Pharms. USA, Inc.*, 347 F.3d 1367, 1369 (Fed. Cir. 2003) (upholding method patent for treating urolithiasis); *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d

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[2] *See Classen Immunotherapies, Inc. v. Biogen IDEC*, 304 Fed. Appx. 866 (Fed. Cir. 2008) (unpublished) (rejecting medical treatment patent in light of *Bilski*'s machine-or-transformation test, without analysis).

1223, 1224, 1230-32 (Fed. Cir. 1994) (upholding method patent for treating AIDS with AZT), *cert. denied*, 516 U.S. 1070 (1996).[3]

Second, if the Federal Circuit's focus on "machines" were applied to exclude other categories of patentable subject matter, it would implement a bias in favor of industrial age processes that would undermine medical treatment patents. *See Bilski*, 545 F.3d at 1011-14 (Rader, J., dissenting). The statute expressly states that patentable subject matter includes any useful "process, machine, manufacture, or composition of matter" and that a "process" includes "a new use of a known process, machine, manufacture, composition of matter, or material." 35 U.S.C. §§ 101, 100; *see also id.* § 155 (providing term extension during FDA regulatory review for a "patent which encompasses within its scope a composition of matter or a *process for using such composition*") (emphasis added). Medical diagnostic patents and method of treatment patents frequently consist of "processes" involving compositions of matter that unquestionably fall within the text of § 101 but would fail a cramped application of the Federal Circuit's machine-or-transformation test. There is no evidence that Congress intended to single out machines, alone among the enumerated statutory subject matters, for special status under the patent laws. Indeed, two judges suggested that processes "involving manufactures, machines, or compositions of matter" are patentable under § 101. *Bilski*, 545 F.3d at 966 (Dyk, J., concurring, with Linn, J.). Nothing suggests that Congress wanted to bias the development of science toward solutions relying on mechanical rather than chemical or bio-chemical engineering. And processes involving synthetic, patentable compositions of matter, such as pharmaceuticals, no more preempt "natural laws" or "fundamental principles" than processes involving man-made machines do. This Court should clarify that a proper understanding of § 101 does not include any such arbitrary, non-statutory distinction.

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[3] *See also In re Zierden*, 411 F.2d 1325, 1326, 1329 (C.C.P.A. 1969) (rejecting challenge to patented method for using compound to purify water and noting that "there is express statutory authority for a patent on a process which is a new use of a known process, composition of matter, or material") (citing 35 U.S.C. §§ 100(b), 101); *cf. Dawson Chem. Co. v. Rohm & Haas Co.*, 448 U.S. 176, 185 (1980) (assuming, without deciding, validity of patent drawn to method of using propanil as an herbicide).

Third, courts applying the *Bilski* test might treat the analysis of correlations between markers in the human body and disease conditions necessary to improve patient treatment as "insignificant extra-solution activity" or "mere data gathering." For example, a method involving extracting, transforming, and analyzing bodily fluids in order to diagnose a disease and provide vital information for calibrating patient treatment is a concrete process with real-world benefits (saving or enhancing lives). However, the decision below could be read to permit courts to exclude the transformations and machines necessarily involved in those steps as peripheral to the process, without providing the courts useful direction to distinguish the peripheral from the essential. *Bilski*, 545 F.3d at 957. A test for § 101 that establishes a needlessly restrictive conception of transformation or "machines," or an overly expansive exclusion of what constitutes "mere data gathering" or "insignificant extra-solution activity" would threaten to render all medical treatment and diagnostic methods unpatentable.

The dissent in *Laboratory Corp. of America Holdings v. Metabolite Laboratories, Inc.*, 548 U.S. 124 (2006) ("*Lab Corp*"), starts down this dangerous path. In *Lab Corp*, the Court was poised to consider the patentability of a medical diagnostic method for determining vitamin deficiencies based on a patient's homocysteine levels, but instead determined the issue was not properly presented. This provoked a dissent, which argued that the method was an unpatentable natural phenomenon because it "embod[ies] only the correlation between homocysteine and vitamin deficiency." *Id.* at 137 (Breyer, J., dissenting).

However, as one judge in *Bilski* argued, the *Lab Corp* dissent "is premised on a fundamental misapprehension of the distinction between a natural phenomenon and a patentable process." *Bilski*, 545 F.3d at 1014 (Rader, J., dissenting). There is nothing "abstract" about a "new process that detects the life-threatening condition" by assaying a patient's blood and measuring certain amino acid levels. *Id.* Only by ignoring the concrete thrust and steps of the diagnostic patent as a whole could the *Lab Corp* dissent conclude that the process consisted of nothing more than a natural law akin to such grand principles as gravity or $E=mc^2$. 548 U.S. at 134-37. For example, the dissent argued that the necessary physical transformation of a blood sample is not a qualifying "transformation" for purposes of § 101 because the method is "*not* a process for transforming blood or any other matter." *Id.* at 136. Also, the dissent found irrelevant the method's useful and tangible result of improving patient care. *Id.* at 136-37.

The *Lab Corp* dissent's restrictive application of § 101, to which the court below gave a passing nod, *Bilski*, 545 F.3d at 965 n.27, puts all such diagnostic and treatment patents at risk. Indeed, in another case, a district court leaned heavily on the *Lab Corp* dissent in rejecting even more clearly patentable methods for improving treatment of autoimmune diseases (such as Crohn's disease) involving administering thiopurine drugs, measuring the resulting metabolite levels in the patient's blood, and deriving useful data for calibrating future treatment. *See Prometheus Labs., Inc. v. Mayo Collaborative Servs.*, No. 04-cv-1200 JAH (RBB), 2008 WL 878910 (S.D. Cal. Mar. 28, 2008), *appeal pending* No. 2008-1403 (Fed. Cir.) (oral argument held Aug. 5, 2009). Even though these methods provide doctors with crucial individualized information that permits far more effective (often life-saving) treatment of seriously-ill patients, the district court rejected the process patents under § 101 as embodying nothing more than "natural phenomena" and "mere[] data-gathering" steps. *Id.* at *6-12 (relying on reasoning in *Lab Corp* dissent). Applied restrictively, the *Bilski* machine-or-transformation test might similarly render all such treatment methods unpatentable. *See Classen*, 304 Fed. Appx. at 867 (unpublished) (rejecting immunization method patents in light of *Bilski*). This would not only upset the settled expectations of thousands of patent-holders, but more importantly would stifle future developments in a field that has produced improved methods for diagnosing and treating such debilitating or life-threatening conditions as lung cancer, breast cancer, ovarian cancer, prostate cancer, Alzheimer's disease, fibromyalgia, bone loss, and urolithiasis. *See, e.g.*, U.S. Pat. Nos. 7,368,233

(2008), 4,968,603 (1990), 5,840,501 (1998), 5,599,677 (1997), 5,985,581 (1999), 7,056,686 (2006), 5,541,221 (1996), 4,621,077 (1986).

It is notable that Congress expressly considered whether medical methods should be patentable, and declined to amend the Patent Act to exclude such methods from its aegis. In 1995, Congress considered exempting certain medical methods from patent protection, but ultimately declined to do so. H.R. 1127, 104th Cong. (introduced Mar. 3, 1995). In 1996, Congress provided limited immunity from patent infringement liability for the performance of certain medical procedures, but it did not exempt such procedures from patent protection. 35 U.S.C. § 287(c); *see* Pub. L. No. 104-208, § 616, 110 Stat. 3009, 3009-67 (1996). This Court has previously found such factors significant in construing § 101. *J.E.M. Ag Supply, Inc.*, 534 U.S. at 145 (reasoning that, in the face of numerous plant patents, Congress "not only failed to pass legislation indicating that it disagrees with the PTO's interpretation of § 101, it has even recognized the availability of [§ 101] patents for plants").

The incentives provided by the patent system are critical to promoting technological innovation in the field of personalized medicine, where development costs are high and costs of imitation are often low.[4]

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[4] *See* Michael A. Carrier, *Unraveling the Patent-Antitrust Paradox*, 150 U. Pa. L. Rev. 761, 823-24 (2002) ("Where the expense and time necessary to invent and commercialize a product is significant, the importance of patents increases. ... [T]he cost of searching for the next [biotechnology] breakthrough can be prohibitive."); *id.* at 827 ("The easier it is for competitors to imitate a product, the greater is the need for patents."); Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 Va. L.

Denial of patent protection would "undermine and discourage future research" for such tools. *Bilski*, 545 F.3d at 1014 (Rader, J., dissenting). Indeed, some have credited this Court's decision in *Diamond v. Chakrabarty*, 447 U.S. 303 (1980) (recognizing the patentability of a genetically engineered bacteria), with spurring progress in genetic engineering. *See* FTC, *To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy*, ch. 1, at 21 & n.143 (2003), *available at* http://www.ftc.gov/os/2003/10/innovationrpt.pdf (citing examples).

On the other hand, many business method patents, such as Amazon's "one-click" patent, describe "simple ideas easily conceived" that could profitably have been developed without the incentives provided by the patent system. Michael A. Carrier, *Unraveling the Patent-Antitrust Paradox*, 150 U. Pa. L. Rev. 761, 826 (2002). Unlike such business methods that "by their very nature, provide a competitive advantage and thus generate their own incentives," *Bilski*, 545 F.3d at 1005 (Mayer, J., dissenting), personalized medicine requires investment in innovation that may not be recouped absent patent protection. *See also* Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 Va. L. Rev. 1575, 1616-18 (2003) (while innovation in business methods would continue in the absence of patent protection, "innovation would drop substantially

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Rev. 1575, 1616 (2003) ("The ratio of inventor cost to imitator cost [in pharmaceuticals], therefore, is quite large in the absence of effective patent protection."); *id.* at 1589 n.37 ("[Two] studies found that patents play a major role in supporting innovation in only a few industries, most notably in chemistry and pharmaceuticals.").

in the pharmaceutical industry in the absence of effective patent protection"). It is fair to question whether the availability of business method patents promotes innovation and research as opposed to rent-seeking, but those same concerns do not apply to diagnostic and therapeutic innovations.

In deciding this case about a business-method patent, the Court should take care not inadvertently to squelch the promise of genetic and personalized medicine by adopting a general approach to § 101 that would prove hostile to innovations in medicine and biotechnology. Concerns over expansive patents on abstract methods of arranging business dealings or legal affairs provide no warrant to artificially tie the scope of § 101 to a bygone industrial era. This Court should make clear that any § 101 test must avoid such pitfalls and remain flexible enough "to allow courts to adapt to the rapid technological and legal developments in the patent system." *eBay Inc.*, 547 U.S. at 397 (Kennedy, J., concurring). At the very least, this Court should explicitly reserve the question of how best to analyze medical diagnostic and treatment patents so that the lower courts do not mistakenly apply any standards arising from this case to unsettle such patents. *Cf.* Gov. Opp. to Cert. at 17 n.4 (noting that the decision below did not resolve the "eligibility of biotechnological or chemical inventions").

CONCLUSION

This Court should hold that § 101 excludes only abstract principles, and at a minimum should interpret § 101 in a manner that does not threaten the burgeoning field of medical diagnostic and treatment technology.

Respectfully submitted,

RICHARD P. BRESS
Counsel of Record
J. SCOTT BALLENGER
ALEXANDER MALTAS
GABRIEL K. BELL
LATHAM & WATKINS LLP
555 11TH STREET, NW
SUITE 1000
WASHINGTON, DC 20004
(202) 637-2200

AMICUS CURIAE BRIEF

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BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,
v.
DAVID J. KAPPOS, UNDER SECRETARY OF COMMERCE
FOR INTELLECTUAL PROPERTY AND DIRECTOR,
PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF *AMICUS CURIAE* OF RED HAT, INC. IN SUPPORT OF AFFIRMANCE

ROBERT H. TILLER
Counsel of Record
RED HAT, INC.
1801 Varsity Drive
Raleigh, NC 27606
(919) 754-4232

Counsel for Amicus Curiae

WILSON-EPES PRINTING CO., INC. – (202) 789-0096 – WASHINGTON, D.C. 20002

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IN THE

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DAVID J. KAPPOS, UNDER SECRETARY OF COMMERCE
FOR INTELLECTUAL PROPERTY AND DIRECTOR,
PATENT AND TRADEMARK OFFICE,
Respondent.

**On Writ of Certiorari to the
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for the Federal Circuit**

BRIEF *AMICUS CURIAE* OF RED HAT, INC. IN SUPPORT OF AFFIRMANCE

STATEMENT OF INTEREST OF *AMICUS CURIAE* RED HAT, INC.

Red Hat, Inc. is the world's leading provider of open source software and related services to enterprise customers.[1] Its software products are used by

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[1] No counsel for a party authored this brief in whole or in part, and no such counsel made a monetary contribution intended to fund the preparation or submission of this brief. No person other than *amicus curiae*, its members, or its counsel made a monetary contribution to its preparation or submission. Petitioners and Respondents have consented to the filing of this brief through blanket letters of consent filed with the Clerk's Office.

Wall Street investment firms, hundreds of Fortune 500 companies, and the United States government. Headquartered in Raleigh, North Carolina, Red Hat has offices in 28 countries.

Red Hat's interest in this proceeding is based on its experience in the software industry and its commitment to the free and open source software community. Open source software is growing at an exponential rate,[2] and is already of strategic economic importance. It provides the technological backbone of many large corporations and supports essential functions of many national and regional governments. It is used daily by millions of individuals for such activities as web searching, email, on-line shopping, and banking. It is found in devices as varied as mainframe computers, desktop computers, cellular phones, camcorders, medical devices, automobiles, and warships.

The open source model produces software innovation through a mechanism of collaborative development that relies on free communication of ideas among large numbers of independent individuals and companies. To understand open source, it is helpful to understand generally how software is made. Software begins as plain text "source code." Programmers write and edit source code in human-readable programming languages that allow specification of software features and behavior at a high level of abstraction. Source code is typically translated by a program called a compiler into "object code" form, which basically consists of a series of instructions to be executed on a computer. Since object code consists of unintelligible strings of 1s and 0s, software is effectively unmodifiable without access to its source code. Open source software permits such modification by making the source code available to the user.

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[2] The amount of open source code doubles every fourteen months. Amit Deshpande & Dirk Riehle, *The Total Growth of Open Source*, in PROCEEDINGS OF THE FOURTH CONFERENCE ON OPEN SOURCE SYSTEMS, 197-209 (Springer Verlag, 2008), http://dirkriehle.com/wp-content/uploads/2008/03/oss-2008-total-growth-final-web.pdf.

Open source software is the product of collaborative development that uses a combination of technological and legal means. Typically, an open source program originates as a community-based project whose members work together using Internet tools such as email, mailing lists, Internet relay chat, bug reporting systems, wikis, and source code version control systems. These tools enable rapid communication among geographically dispersed software developers, and make it possible for large numbers of developers from many different backgrounds and organizations to work collaboratively. A community project makes its software publicly available in source code form, under licensing terms that grant very broad, royalty-free copyright permissions allowing further use, copying, modification and distribution.

In making source code available and conferring broad copyright permissions, open source differs significantly from traditional proprietary software. A vendor of proprietary software generally develops the software in-house and provides only object code to the user subject to restrictive licenses that allow no rights to copy, modify, or redistribute that code. Such vendors retain the source code as a trade secret.

The open source development model has proven to be highly effective in producing software of superior quality.[3] Because there are many developers working as collaborators in a distributed fashion, innovation happens rapidly.[4] Because of the many who volunteer their time, and the availability of the source code under royalty-free licenses granting generous modification and distribution rights, the cost of producing and improving software is low. Software bugs and security problems are quickly identified and remedied. Moreover, because users have access to the source code, those users can diagnose problems and customize the software to suit their particular needs.

The scope of patentable subject matter is an issue of critical importance to the future development of all software, including open source. Because open source innovation depends on sharing source code and free collaboration, open source community members do not generally seek to prohibit or control use of open source software through patents, and most open source software developers view software patents as hindering innovation. Red Hat respectfully submits that this Court should evaluate the issues at bar with a view to the importance of open source software and the bright promise of future open source innovation.

SUMMARY OF ARGUMENT

In the decision below, the Federal Circuit issued a course correction. Beginning in the mid-1990's, that court disregarded the guideposts established by this

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[3] There are numerous widely used open source software programs, including the Linux operating system kernel, the Apache web server, the Firefox web browser, the MySQL database management system, and the GCC compiler collection.

[4] *See, e.g.*, ERIC VON HIPPEL, DEMOCRATIZING INNOVATION 93-106 (2005), available at http://web.mit.edu/evhippel/www/books.htm.

Court on the limits of patentable subject matter and issued a series of decisions that opened the floodgates for patents on certain kinds of abstract ideas. As a result, there are now hundreds of thousands of patents on abstract subject matter, and tens of thousands of new patents are now granted each year for software and business methods that were previously excluded from patentable subject matter.

Far from encouraging innovation, this proliferation of patents has seriously encumbered innovation in the software industry. Software is an abstract technology, and translating software functions into patent language generally results in patents with vague and uncertain boundaries. Software products are often highly complex, created by combining hundreds or thousands of discrete (and potentially novel) elements in a cumulative process. Because the boundaries of software patents are exceedingly vague and the numbers of issued software patents is now enormous, it is virtually impossible to rule out the possibility that a new software product may arguably infringe some patent.

Thus, under the Federal Circuit's previous erroneous approach, the risk of going forward with a new software product now always entails an unavoidable risk of a lawsuit that may cost many millions of dollars in legal fees, as well as actual damages, treble damages, and an injunction that terminates a business. Only those with an unusually high tolerance for risk will participate in such a market. The more risk averse, no matter how great their business or technical gifts and innovative potential, are likely to avoid such a market and seek their fortunes elsewhere.

This case offers an opportunity to restore the historical and well-founded boundaries for patentable subject matter that exclude abstract ideas from patent eligibility. It also offers an opportunity to reaffirm the rule, supported both by case law and by sound policy, that computer software is among the types of abstract subject matter that are not patentable under 35 U.S.C. § 101. The machine-or-transformation test set forth in the decision below is fully consistent with this Court's prior case law regarding the patenting of abstract ideas. The Court should adopt this test and make clear that it excludes software from patenting.

ARGUMENT

I. THE COURT BELOW CORRECTLY APPLIED THIS COURT'S PRIOR DECISIONS ESTABLISHING THAT ABSTRACT IDEAS ARE NOT PATENTABLE, AND ITS MACHINE-OR-TRANSFORMATION TEST IS CONSISTENT WITH THOSE DECISIONS

This Court has long recognized that patents have costs as well as benefits. *See Gottschalk v. Benson*, 409 U.S. 63, 68 (1972) (explaining *Oreilly v. Morse*, 56 U.S. 62 (1853)). Patents do not always promote innovation, and they may substantially hinder it. *See id.* A patent on a process excludes others from using that process. If the patent is too broad or vague, it may block or discourage technological progress. Therefore defining the proper subject matter limits of process patents under 35 U.S.C. § 101 is of critical importance. This requires distinguishing between a patentable "process" within the meaning of Section 101, and abstract intellectual concepts.

Thus this Court has determined that "[p]henomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work." *Benson*, 409 U.S. at 67. It runs directly counter to the objective of fostering innovation to allow patents that impede scientific and technological progress. A patent on an algorithm or other abstract idea, as opposed to a specific tangible process, blocks innovation. *Id.* at 68.

To be sure, "[t]he line between a patentable 'process' and an unpatentable 'principle' is not always clear." *Parker v. Flook*, 437 U.S. 584, 589 (1978). This Court has repeatedly faced this line-drawing problem in the context of computer-related patents, and has consistently articulated the guideposts to be used. It has affirmed and reaffirmed that "[t]ransformation and reduction of an article 'to a different state or thing' is the clue to patentability of a process claim that does not include particular machines." *Benson*, 409 U.S. at 70. *Accord Diamond v. Diehr*, 450 U.S. 175, 192 (1981); *Flook*, 437 U.S. at 589.

In the mid-1990s, however, the Federal Circuit took an approach at odds with this Court's teachings in *Flook*, *Benson*, and *Diehr*. In the leading cases of *In re Allapat*, 33 F.3d 1526 (Fed. Cir. 1994), and *State Street Bank & Trust Co. v. Signature Fin. Group Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), *cert. denied*, 525 U.S. 1093 (1999), the Federal Circuit significantly broadened the standards for patentable subject matter. These and subsequent Federal Circuit cases ignored the risks of granting patents on abstract ideas, and instead held that usefulness ("a useful, concrete and tangible result") was sufficient to satisfy Section 101.

State Street, 149 F.3d at 1373; *Allapat*, 33 F.3d at 1544.

As explained in the next section, this departure from this Court's teachings caused enormous damage to the patent system in general and the software industry in particular. In the decision below, the en banc court of appeals acknowledged that its "useful, concrete and tangible result" test was problematic. *In re Bilski*, 545 F.3d 943, 959-60 (Fed. Cir. 2008). It carefully reexamined this Court's decisions in *Flook, Benson*, and *Diehr*, acknowledged the importance of not extending patentable subject matter so far as to impede technological innovation, and articulated a test that is entirely consistent with those decisions.

Using language from *Flook, Benson*, and *Diehr*, the Federal Circuit's test distinguishes a patentable process from an abstract idea by considering whether "(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing." *Id.* at 954. The appeals court explained that "the use of a specific machine or transformation of an article must impose meaningful limits on the claim's scope to impart patent-eligibility." *Id.* at 961. In addition, the court explained that "the involvement of the machine or transformation in the claimed process must not merely be insignificant extra-solution activity." *Id.* at 962 (citing *Flook*, 437 U.S. at 590).

The decision below thereby corrected the erroneous approach that the Federal Circuit took to Section 101 in the mid-1990s. The Federal Circuit's machine-or-transformation test is in full accord with this Court's prior decisions in *Flook, Benson*, and *Diehr*.

II. THE FEDERAL CIRCUIT CORRECTLY ABANDONED A MISINTERPRETATION OF STATUTORY SCOPE THAT HAS CAUSED DRAMATIC HARM TO THE INNOVATION PROCESS IN SOFTWARE

The decision below did not purport to address in categorical terms the patenting of either business methods or software. It is obvious, however, that the machine-or-transformation test (or any other replacement test considered by this Court) will govern attempts to patent these and other abstract ideas. Patenting of software has been particularly controversial, and presents in a clear form the challenge of separating abstract ideas from patentable processes. The creation and expansion of the field of software patents therefore is worth considering both as an example of the larger problem posed by abstract patents and a problem in its own right.

A. Software Innovation Long Predated Software Patents

The importance of the software industry to the United States economy is well recognized. What is less well recognized is that major innovations and economic successes in the software industry occurred prior to the Federal Circuit's decisions in the mid-1990s encouraging software patents. Such enormously successful software products as Microsoft Word, Oracle Database, Lotus 1-2-3, the Unix operating system, and the GNU C compiler all date from the 1980s or earlier—well before the proliferation of software patents. Market forces, rather than patents, spurred development of these products. *See To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy*, Report of the U.S. Federal Trade Commission, ch. 3 § V, at 46 (2003), available at http://www2.ftc.gov/os/2003/10/innovationrpt.pdf (hereinafter "FTC Innovation Report").[5]

Indeed, in the 1972 *Benson* decision, this Court took note of the exclusion of software from patenting, of problems caused by attempts to patent software, and of the industry's impressive growth without patents. "Direct attempts to patent [software] programs have been rejected on the ground of nonstatutory subject matter." 409 U.S. at 72 (quoting *'To Promote the Progress of . . . Useful Arts,' The President's Commission on the Patent System* 13 (1966)). "Indirect attempts to obtain patents and avoid the rejection, by drafting claims as a process, or a machine or components thereof programmed in a given manner, rather than as a program itself, have confused the issue further and should not be permitted." *Id.*

The *Benson* Court, quoting the President's Commission, also noted the inability of the Patent Office to examine adequately software patent applications. 409 U.S. at 72. At the same time, the Court noted "that the creation of programs has undergone substantial and satisfactory growth in the absence of patent protection and that copyright protection for programs is presently available." *Id.*

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[5] The profit motive is, of course, an important incentive for software development, but it is not the only one. Open source software developers generally work for open source projects on a voluntary basis. *See* STEVEN WEBER, THE SUCCESS OF OPEN SOURCE 129 (2004). Some of the motivations for their contributions include improving the functioning of a product for business or personal use, enhancing programming skills, reputation, philosophical commitment to free software, and personal enjoyment. *Id.* at 134-36.

Thus the software industry began and reached maturity without the benefit of extensive patent monopolies. This is not to say there was no legal protection for software products. As the *Benson* Court noted, copyright law provided (and it still provides) substantial protection for software products.[6]

This recent history, by itself, calls into serious question whether software patents serve the primary purpose of the patent system of encouraging innovation. *See* U.S. Const. art. I, § 8. Many of the world's most successful software companies and software products originated and grew strong without incentives from patents. Instead, these successes arose from the dynamics of the competitive market place. *FTC Innovation Report*, ch. 3, § V at 46. That is, prior to the expansion of patentability for software in the mid-1990s, survival in the market place for software depended primarily on the ability to innovate better and more quickly than competitors. Competition, without patent monopolies, resulted in a remarkably dynamic software industry with an impressive record of innovation.[7]

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[6] Copyright protects authors against the copying of their software. Patents, of course, block independent invention of patented technology. Although some patent advocates use the rhetoric of "theft" of ideas to support their arguments, there is evidence that the great majority of patent lawsuits are not against defendants who copied inventions but rather against independent inventors. DAN L. BURK & MARK A. LEMLEY, THE PATENT CRISIS AND HOW THE COURTS CAN SOLVE IT 28 (2009) (hereinafter "THE PATENT CRISIS").

[7] Although it is frequently assumed that patents encourage technological innovation, there is little empirical evidence supporting this view. In a 2003 report "Patents in the Knowledge-Based Economy," the National Academies undertook a comprehensive review of the United States patent system, and

B. The Proliferation of Software Patents Has Resulted in New Risks that Discourage Innovation

Since the mid-1990s, there is one respect in which software patents have been successful as a species: they have proliferated. At present in the United States there are at least 200,000 issued software patents. *See* JAMES BESSEN & MICHAEL J. MEURER, PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK 22 (2008) (hereinafter "PATENT FAILURE"), available in part at http://researchoninnovation.org/dopatentswork/. They continue to increase at the rate of approximately 20,000 per year. *See* James Bessen & Robert Hunt, *An Empirical Look at Software Patents*, 16 J. ECON. & MGMT. STRATEGY 157, 158 (2007). This proliferation has raised significant risks for software developers.

For years, far-sighted industry leaders, scholars, and software developers have warned of these risks and opposed software patents. *See* PATENT FAILURE at 189. These include Bill Gates, co-founder of Microsoft. In 1991, Mr. Gates stated, "If people had understood how patents would be granted when most

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concluded that "[t]here are theoretical as well as empirical reasons to question whether patent rights advance innovation in a substantial way in most industries." COMM. ON INTELLECTUAL PROP. RIGHTS IN THE KNOWLEDGE-BASED ECON., NAT'L RESEARCH COUNCIL, PATENTS IN THE KNOWLEDGE-BASED ECONOMY 2 (Wesley M. Cohen & Stephen A. Merrill eds., 2003), available at http://www.nap.edu/catalog.php?record_id=10770. Scholarly studies have called into question the basic assumption that patent protection in general spurs innovation. Andrew W. Torrance & Bill Tomlinson, *Patents and the Regress of Useful Arts*, 10 COLUM. SCI. & TECH. L. REV. 130, 133-34 (2009).

of today's ideas were invented and had taken out patents, the industry would be at a complete standstill today." Kirk Rowe, *Why Pay for What's Free?: Minimizing the Patent Threat to Free and Open Source Software*, 7 J. MARSHALL REV. INTELL. PROP. L. 595, 595 (2008).

Similar, Donald E. Knuth, Professor Emeritus at Stanford University and one of the world's most respected computer scientists, wrote in 1994, "When I think of the computer programs I require daily to get my own work done, I cannot help but realize that none of them would exist today if software patents had been prevalent in the 1960s and 1970s." Donald E. Knuth, Letter to Commissioner of Patents and Trademarks 2 (Feb. 23, 1994), available at http://documents.epo.org/projects/babylon/eponet.nsf/0/5294C4422611FE7BC12575B6006414D2/$File/G3-08_amicus_curiae_brief_Knuth_en.pdf. Dr. Knuth also stated, "I strongly believe that the recent trend to patenting algorithms is of benefit only to a very small number of attorneys and inventors, while it is seriously harmful to the vast majority of people who want to do useful things with computers." *Id.*

The views of Mr. Gates and Dr. Knuth were shared by many firms and developers in the 1990s. PATENT FAILURE at 189. The risk that they articulated—that patents tend to hinder software innovation—relates to at least two different aspects of software: the incremental nature of software development and the near impossibility of establishing clear boundaries for software patents.

In general, software innovation is cumulative in nature—that is, new products typically build on products built previously. *See FTC Innovation Report*, ch. 3, § V at 44-45; THE PATENT CRISIS at 47. Innovation is rapid and product cycles are short.[8] Major software products are complex, involving many thousands or even millions of lines of code and many different components. Components are normally developed using many earlier-developed sub-components. Some software products contain thousands of distinguishable components, any number of which could (in view of erroneous patenting practices) already be patented. *See FTC Innovation Report*, ch. 3 § V at 52; THE PATENT CRISIS at 53-54.

It is, however, practically impossible to know with reasonable certainty whether a new software product could be said to infringe some prior software patent. Patents are conventionally referred to as intellectual property. However, as James Bessen and Michael Meurer have explained in detail, patents differ substantially from tangible property in that their boundaries are often fuzzy and unpredictable. PATENT FAILURE at 46-72. If patents do not give clear notice of their limits, they create a risk of inadvertent infringement. Vague patents also enable opportunistic behavior. For example, a patentee may, based on vague language, claim ownership of a technology unknown to the inventor, but instead first conceived by someone else. *Id.* at 199.[9]

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[8] Because of rapid product cycles, it is difficult for a software inventor to use a patent productively to enforce legitimate rights. A patent lawsuit is likely to take longer to resolve than a product cycle, and may even take several product cycles. *See* THE PATENT CRISIS at 57.

[9] For example, a plaintiff may argue that a pre-internet patent covers some use of internet technology. Michael J. Meurer, *Controlling Opportunistic and Anti-competitive Intellectual Property Litigation*, 44 B.C. L. REV. 509, 542 (2003).

This problem of uncertain patent boundaries is particularly acute with software patents. Software is an abstract technology.[10] Software algorithms can be represented in numerous different ways, and even computer scientists sometimes disagree over whether two software technologies are equivalent. *See* PATENT FAILURE at 22, 203. Thus it is not surprising that software patents are typically framed in abstract language with uncertain boundaries. *See* PATENT FAILURE at 23, 203; THE PATENT CRISIS at 27, 58. As a result, a software developer, when shown a software patent, often cannot be sure whether the patent reads on newly developed code.

This difficulty is multiplied hundreds or thousands of times with regard to a complex software product combining hundreds or thousands of discrete components. A separate but related problem faces all software developers—that of the impossibility of patent clearance, or determining whether there are existing patents that may be said to read on a new product. There is no reliable, economical method for searching the hundreds of thousands of existing software patents.[11] PATENT FAILURE at 50, 69-70. *See also* MATH YOU CAN'T USE at 79-80. The clearance problem is made even worse by the existence of tens of thousands of applications that for eighteen months after filing are unpublished.

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[10] Computer software is abstract because it is, in essence, nothing more than a set of mathematical algorithms, expressed in a particular programming or machine language. An algorithm is a mathematical construct, consisting of a series of steps for solving a problem. *See* BEN KLEMENS, MATH YOU CAN'T USE – PATENTS, COPYRIGHT, AND SOFTWARE 48-51 (2006) (hereinafter "MATH YOU CAN'T USE"). Computer scientists view software as consisting entirely of algorithms. *See* Ben Klemens, *The Rise of the Information Processing Patent*, 14 B.U. J. SCI. & TECH. L. 1, 9-11 (2008). As Donald Knuth has explained, "[It is not] possible to distinguish between 'numerical' and 'nonnumerical' algorithms, as if numbers were somehow different from other kinds of precise information." *See* Letter to Commissioner of Patents and Trademarks at 1. This Court has held that algorithms are not patentable. *Benson*, 409 U.S. at 72.

Thus, simply by virtue of producing and marketing an innovative software product, a software developer assumes the risk of a costly patent infringement lawsuit.[12] *See FTC Innovation Report*, ch. 3. § V at 53-54, 56. In the U.S., software patents are more than twice as likely to be the subject of a lawsuit than other patents and account for one quarter of all patent lawsuits. PATENT FAILURE at 22, 192. The cost of defending a patent lawsuit frequently amounts to several million dollars. AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION, REPORT OF THE ECONOMIC SURVEY I-128-29 (2009). Such lawsuits involve technical issues that are difficult for judges and juries to understand, and so even with a strong defense the outcome is usually far from certain. If there is a judgment of infringement, the penalty may be an injunction ending further production and enormous monetary damages. Defense costs and litigation risks are so large that in most cases defendants agree to some payment to settle such cases. Even when claims appear to have no valid basis, targets frequently agree to pay for licenses based on the mere threat of litigation. Michael J. Meurer, *Controlling Opportunistic and Anti-competitive Intellectual Property Litigation*, 44 B.C. L. REV. at 542.

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[11] The unreliability of indexing for software patents also means that software patents are of little use in advancing innovation by disclosing new technology. From a software developer's point of view, it is completely impractical to seek new ideas in patents, and few if any do so. Most avoid reading patents, for fear that a chance encounter may increase the risk that they will one day be accused of willful infringement. *See* THE PATENT CRISIS at 32; Mark Lemley, *Ignoring Patents*, 2008 MICH. ST. L. REV. 19, 21 (Spring 2008).

[12] A further indication of the ineffectiveness of the patent system for software is that there is little patent licensing prior to development and distribution of products. *See* THE PATENT CRISIS at 59. Because of vague patent boundaries and unreliable search methods, it is not possible to determine all possible rights at issue and strike bargains as to those rights.

Some large technology companies have addressed the risk of inadvertent infringement of patents by seeking as many patents as possible, on the theory that a large patent portfolio signals the possibility of a countersuit and thus will deter other companies from bringing a patent lawsuit.[13] *See FTC Innovation Report*, ch. 3 § V at 56; THE PATENT CRISIS at 55. Companies with such portfolios often enter into cross-licensing agreements with other large companies that have their own patent portfolios in an attempt to obtain a modicum of patent peace. *Id.* at 52. *See* RICHARD M. STALLMAN, FREE SOFTWARE, FREE SOCIETY: SELECTED ESSAYS OF RICHARD M. STALLMAN 101-103 (Joshua Gay, ed., 2002); MATH YOU CAN'T USE at 83-85.

While such defensive measures are understandable from an individual enterprise's perspective, they are far from optimal. They create a vicious cycle: to defend against a multitude of vague patents, companies obtain still more vague patents. Resources expended on this strategy are, of course, unavailable for research and development or for other more productive purposes. *FTC Innovation Report*, ch. 3 § V at 52. Moreover, although established companies may be able to bear the cost of this deterrence strategy, small companies and potential new competitors generally lack the resources to do so. Thus the system discourages new entry into the market, and thereby hinders innovation. *See id.* at 51-52. *See also* CLAYTON M. CHRISTENSEN, THE INNOVATOR'S DILEMMA 26, 52 (2006) (showing that small firms generally lead in new technologies).

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[13] Red Hat, like some of its competitors, has built a patent portfolio. This portfolio is designed to be used only for the purpose of defending against patent aggression. Red Hat has extended a public Patent Promise under which it pledges not to enforce its patents against parties that infringe those patents through their use of software covered by designated open source licenses. *See* https://www.redhat.com/legal/patent_policy.html.

Moreover, even for companies with the financial resources to build patent portfolios, the deterrence approach is not always effective. With the proliferation of software patents has come the expansion of a class of businesses created expressly for the purpose of exploiting vague patents. *See* Ben Klemens, *The Rise of the Information Processing Patent*, 14 B.U. J. SCI. & TECH. L. at 27-31; *Meurer*, *supra*. These are sometimes referred to as non-practicing entities or, less politely, as patent trolls. These entities acquire vague patents at low cost with a view to threatening or bringing lawsuits against operating businesses. They frequently conceal their identities and holdings until the companies that are their targets, which have no knowledge of the relevant patents, are locked in to a product and business strategy. Then they demand ransom. Because such entities produce no products, they are not deterred by the possibility of a countersuit.

In sum, all software companies, developers, and users face substantial risks from software patents. These risks include whether an unknown patent may cover newly written code or some other preexisting code in a complex product, whether such a patent could be the basis of a lawsuit, whether a relevant patent is in the hands of an aggressive party dedicated to bringing patent lawsuits, and whether a trial may result in an injunction or damages award.

These risks have obviously not brought the software industry to a standstill. Established companies are protected to some extent by their patent portfolios and war chests. But for them and even more for new players, software innovation, like sky diving, requires a high tolerance for risk. *See* MATH YOU CAN'T USE at 91. Developers without a high risk tolerance are likely to find the threat of ruinous lawsuits to be discouraging, and to use their talents and energy in less hazardous endeavors. Thus software patents discourage new entries into the marketplace and new software innovation.

III. AN ABSTRACT IDEA DOES NOT BECOME PATENTABLE MERELY BY IMPLEMENTING IT IN COMPUTER SOFTWARE

In connection with addressing the test for excluding abstract ideas from patenting, this Court it should also clarify the application of that test in the context of computer programs that run on general purpose computers. Lower court case law and commentary since the Federal Circuit's *en banc* decision shows that this issue is an important one on which this Court's guidance is needed.

The basic question is whether an otherwise unpatentable idea becomes "tied to a particular machine" when it is implemented in software for execution on a general purpose computer. Prior to the decision below, the Federal Circuit gave credence to the idea that a general purpose computer could be transformed into a particular machine by executing software. *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1348 (Fed. Cir. 1999). On the other hand, this view was recently rejected in *Dealertrack, Inc. v. Huber*, No. 06-2335, 2009 WL 2020761, at *4 (C.D. Cal. Jul. 7, 2009). Moreover, it has been recently repeatedly rejected by the Board of Patent Appeals and Interferences. *See, e.g. Ex parte Myr*, No. 2009-005949 (BPAI Sept. 16, 2009); *Ex parte Forman*, No. 2008-005348 (BPAI Aug. 17, 2009); *Ex parte Goud*, No. 2008-003121 (BPAI July 20, 2009); *Ex parte Daughtrey*, No. 2008-0202 (April 8, 2009); *Ex parte Halligan*, No. 2008-2823 (BPAI April 8, 2008); *Ex parte Enenkel*, No. 2008-2239 (April 6, 2009); *Ex parte Nawathe*, No. 2007-3360 (BPAI Feb. 9, 2009); *Ex parte Gutta*, No. 2008-3000 (BPAI Jan. 15, 2009); *Ex parte Cornea-Hasegan*, No. 2008-4742 (BPAI Jan. 13, 2009). This Court's decisions in *Benson* and *Diehr* signal that the mere fact that otherwise unpatentable software is executable on a general purpose computer should not convert such software into a patentable invention.

This is not to say that software may not be part of a patentable process or machine. As *Diehr* recognized, an algorithm that is plainly unpatentable by itself may be a part of a process that is patentable when it involves a physical transformation of the sort that has traditionally been considered patentable, such as an industrial process for curing rubber. 450 U.S. at 184-88. *See also Parker v. Flook*, 437 U.S. at

589-94. The Court has also recognized that an otherwise abstract idea may be patentable when "tied to a particular apparatus." *Flook*, 437 U.S. at 588, n.9.

In *Benson*, the patent application covered "a method of programming a general-purpose digital computer to convert signals from binary-coded decimal to pure binary form." 409 U.S. at 65. The Court found that the procedure at issue was a mathematical algorithm, and amounted to an unpatentable abstract idea. *Id.* at 65-66. It is important to note, however, that the algorithm had "no substantial practical application except in connection with a digital computer." *Id.* at 71. The claims were intended to "cover any use of the claimed method in a general-purpose digital computer of any type." *Id.* at 64.

Thus the algorithm claimed in *Benson* could have been viewed as "tied to a machine," inasmuch as it was functionally tied to a digital computer. Nevertheless, this Court held that the claims were abstract ideas outside the scope of Section 101. Thus *Benson* precludes an interpretation of Section 101 that views abstract ideas as patentable based on their implementation in software running on a general purpose computer.

The more recent decision in *Diehr* is consistent with this understanding. The rubber curing process in *Diehr* involved an algorithm and a computer, but this Court's analysis of subject matter turned on the claim as a whole, which concerned the physical transformation of the rubber—not the implementation of the algorithm in a computer program. 450 U.S. at 184-85. *Diehr* explained that use of the computer did not render the process unpatentable, but the decision makes clear, by its focus on the transformation of rubber, that use of the computer alone does not suffice to make the process patentable. *See id.* at 187.

The *Diehr* Court cautioned against allowing the prohibition on patenting of abstract formulas to "be circumvented by attempting to limit the use of the formula to a particular technological environment." 450 U.S. at 191. "To hold otherwise would allow a competent draftsman to evade the recognized limitations on the type of subject matter eligible for patent protection." *Id.* at 192. In view of this caution, this Court should make clear that the test for patentable subject matter cannot be satisfied by the mere drafting device of adding a general purpose computer as an element in a claim that is otherwise directed to an unpatentable algorithm.

CONCLUSION

The judgment of the Federal Circuit should be affirmed.

Respectfully submitted.

ROBERT H. TILLER
Counsel of Record
RED HAT, INC.
1801 Varsity Drive
Raleigh, NC 27606
(919) 754-4232

Counsel for Amicus Curiae

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IN THE

Supreme Court of the United States

BERNARD L. BILSKI and RAND A. WARSAW,
Petitioners,

v.

JOHN DOLL, Acting Under Secretary of Commerce
for Intellectual Property and Acting Director,
Patent and Trademark Office,
Respondent.

**ON WRIT OF CERTIORARI TO THE
UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT**

BRIEF OF REGULATORY DATACORP, INC, AMERICAN EXPRESS COMPANY, PALM INC., ROCKWELL AUTOMATION, INC., AND SAP AMERICA, INC. AS AMICI CURIAE IN SUPPORT OF NEITHER PARTY

JOHN A. SQUIRES
WALTER G. HANCHUK
CHARLES M. FISH
JOHN KHEIT
CHADBOURNE & PARKE LLP
30 Rockefeller Plaza
New York, NY 10112
(212) 408-5100

JOHN F. DUFFY
Counsel of Record
FRIED FRANK HARRIS SHRIVER
& JACOBSON LLP
1001 Pennsylvania Ave., N.W.
Washington, DC 20004
(202) 639-7000

Attorneys for Amici Curiae

22423

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INTEREST OF AMICI CURIAE

The Amici Curiae[1] are technology companies that provide innovative products and services to other companies and consumers. While the Amici come from diverse industry segments, all devote considerable resources to innovation. The Amici believe that a properly functioning patent system encourages greater investments in innovation and thereby advances the progress of the useful arts.

Collectively, Amici own numerous patents and are also, at times, defendants in patent infringement actions. Amici seek a balanced patent system in which patents are generally available on useful products and processes but are limited to true inventions that meet requirements set forth in the statute. Amici believe that balance can best be achieved by faithfully adhering the statutory directions and eschewing uncertain and shifting glosses that unduly narrow or expand patent protection.

Amicus Regulatory DataCorp, Inc. (RDC) provides the world's largest database of open-source, risk-relevant records and data services that assist financial and other firms in satisfying their due diligence requirements to detect and thwart money laundering, corruption, terrorist financing, and other abusive activities. The Court of Appeals for the Federal Circuit permitted RDC to present amicus arguments during the oral argument below.

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[1] No counsel for a party authored this brief in whole or in part, and no such counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than *amici curiae*, their members, or their counsel made a monetary contribution to its preparation or submission.

Amicus American Express Company is a leading global travel and financial services company.

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SUMMARY OF ARGUMENT

This is a straightforward case of statutory interpretation to be resolved using the ordinary meaning of the language Congress placed in sections 101 and 100(b) of the Patent Act. As this Court has observed, that language is not merely broad but "extremely broad," and its breadth demonstrates that "'Congress plainly contemplated that the patent laws would be given wide scope.'" *J.E.M Ag Supply v. Pioneer Hi-Bred Int'l*, 534 U.S. 124, 130 (2001) (quoting *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980)). The government is now asking this Court to impose a formalistic restriction on definition of "process" that would create an unprecedented and uncertain judicial limitation on patentable subject matter. This Court should reject that invitation just as it did more than a third of a century ago, when the government unsuccessfully advanced the very same argument. *See Gottschalk v. Benson*, 409 U.S. 63, 71 (1972).

Accepting the government's argument would require rejection of core principles of statutory interpretation for the government's position finds no basis in the text or history of the statute. The statutory language chosen by Congress started out extremely broad, and in ensuing re-enactments Congress has taken action that not only underscores the breadth of the provision, but also in one important respect overturns prior judicial precedents imposing a narrowing construction on the language.

The government's position here—even if it were viewed as a proposal for common-law making without regard to the limitations of statutory interpretation—would remain unattractive. The proposed rule lacks even a rudimentary degree of certainty, is difficult or impossible to reconcile with previously issued patents and prior holdings of this Court, and is only one of many competing proposals for limiting the statutory language. Moreover, the machine-or-transformation test is unnecessary because other conventional patent law doctrines, which are well grounded in the statute, are fully capable of addressing any legitimate concerns about patents that are vague, abstract, obvious, or otherwise not useful.

The statutory language here is so clear that this case can be usefully compared to the controversial case of *Church of the Holy Trinity v. United States*, 143 U.S. 457 (1892). Adoption of the government's position would require this Court to go beyond—indeed, well beyond—*Church of the Holy Trinity* in endorsing an atextual approach to statutory interpretation.

I. The Original Meaning and History of the Statutory Text Forecloses the Uncertain and Unprecedented Gloss Imposed Below.

The exact statutory language in §§ 101 and 100(b) can be traced back more than two centuries to the earliest Patent Acts. This historical background confirms not only that Congress has consistently chosen broad language to accomplish its goals but that, to remove any potential ambiguities, Congress has repeatedly *expanded* the scope of the language. The Federal Circuit's acceptance of the government's narrowing construction violates multiple rules of statutory construction, including the "elementary" rule

> that the meaning of a statute must, in the first instance, be sought in the language in which the act is framed, and if that is plain, and if the law is within the constitutional authority of the law-making body which passed it, the sole function of the courts is to enforce it according to its terms.

Caminetti v. United States, 242 U.S. 470, 485 (1917).

1. The 1790 Patent Act.

The first U.S. Patent Act in 1790 defined as patentable subject matter "any useful art, manufacture, engine, machine, or device, or any improvement therein." Act of April 10, 1790, 1 Stat. 109, 110. The first two categories—"useful art" and "manufacture"—remain in the modern statute, and their plain meanings and history provide the best indications of congressional intent.

"[M]anufacture" was already an important word in Anglo-American patent law, for the British Statute of Monopolies from 1623 used that word—and that word only—to describe patentable subject matter under English law. *See* Statute of Monopolies, 21 Jac. 1, c. 3 § 6 (allowing patents on "any manner of new Manufactures within this Realme"). "Manufacture" itself could cover the field of patentable subject matter because, at the time, the noun referred *both* to the process of making *and* to the things made. This dual meaning of "manufacture" was clear in, for example, the Johnson Dictionary, which lists two definitions of "manufacture" in its noun form:

> 1. The practice of making any piece of workmanship.
>
> 2. Any thing made by art.

2 Samuel Johnson, *A Dictionary of the English Language* n90 (6th ed. 1785) (pagination from electronic

version at *http://www.archive.org/stream/dictionaryofengl02johnuoft#page/n90/mode/1up*).[2]

Because of the broad definition of "manufacture," the English patent system routinely issued process patents. Indeed, Chief Justice Eyre estimated in 1795 that "two-thirds, I believe I might say, three-fourths of all patents granted since the statute [of Monopolies] passed, are for methods of operating and of manufacturing, producing no new substances and employing no new machinery." *Boulton v. Bull*, Carp. Pat. Rep. 117, 149 (Ct. Com. Pl. 1795) (Eyre, C.J.).

The meaning of "manufacture" was long a well known part of patent practice on both sides of the Atlantic. Thus, Thomas Webster—one of most prominent early English patent commentators—instructed that "any change in the series of processes pursued will constitute a new manufacture" within the meaning of the Statute of Monopolies. *See* Thomas Webster, *On the Subject-Matter of Letters Patent for Inventions* 9 (1841). Similarly, this Court in *Merrill v. Yeomans*, 94 U.S. 568, 570-71 & 572 (1876), held that "manufacture" in a patent could be "used with equal propriety to express the process of making an article, or the article so made," and that, in that case, it was actually "used in the sense of the word 'process.'"[3]

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[2] The appropriate set of dictionaries to use are those written at approximately the time when the language became law, even if the language has been later re-codified or re-enacted without material change. *See St. Francis College v. Al-Khazraji*, 481 U.S. 604, 610-12 (1987) (interpreting 42 U.S.C. § 1981 using dictionaries published "when § 1981 became law in the 19th century").

Moreover, not only could "manufacture" cover both processes and products, but its contemporaneous meaning allowed it to do so broadly. Thus, the Johnson dictionary includes immensely broad definitions of words used to define each of the meanings of "manufacture." Thus, "workmanship" was defined to include:

> 1. Manufacture; something made by any one.
>
> 2. The skill of a worker; . . . .
>
> 3. The art of working.

2 *Johnson Dictionary* at n1081 (usage examples omitted) (http://www.archive.org/stream/dictionaryofengl02johnuoft #page/n1081/mode/1up). So too, "art" was defined in sweeping terms to mean:

> 1. The power of doing something not taught by nature and instinct . . . .
>
> 2. A science; as, the liberal *arts*.
>
> 3. A trade.

1 *Id.* at n182 (*available at http://www.archive.org/stream/dictionaryofengl01johnuoft#page/n182/mode/1up*).

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[3] The dual meaning of "manufacture" remains in modern usage, though the process of making is one of the secondary meanings. *See, e.g., Webster's Third New International Dictionary* 1378 (1963).

Despite the dual, sweeping and comprehensive meanings attached to the word "manufacture" in both contemporaneous language and patent practice, the first Congress was unwilling to let the definition of patentable subject matter rest solely on one word. Instead, it began this country's definition of patentable subject with the phrase "any useful art"—the phrase that defines the limits of congressional power under the Patent Clause of Article I, sec. 8, cl. 8 of the Constitution. Given the already broad meaning of "manufacture," the addition of the constitutional language provides a fairly clear indication that Congress was not, to put it mildly, searching about for narrow words that would exclude new and useful innovations from the scope of the patent system.

The first Congress's decision to combine "manufacture" with "any useful art" also refutes the argument, relied on by the Government below, that the word "process" in the modern statute (which, pursuant to § 100(b), still encompasses any "art") should be given a narrowing construction by interpreting it "*in pari materia* with the other three categories of inventions" in the modern statute. PTO Supp. Br. 9 (filed Mar. 6, 2008). There are two problems with the Government's argument. First, the *in pari materia* canon applies in interpreting two different *statutes*—the canon holds that "statutes addressing the same subject matter generally should be read as if they were one law." *Wachovia Bank v. Schmidt*, 546 U. S. 303, 315-16 (2006) (internal quotations omitted). It is simply not at issue here whether the list of patentable subject matter categories in § 101 should be read as if they were part of one law.

Second, rather than *in pari materia*, the appropriate canon to apply here is the "cardinal principle . . . that a statute ought, upon the whole, to be so construed that, if it can be prevented, no clause, sentence, or word shall be superfluous, void, or insignificant." *TRW Inc. v. Andrews*, 534 U.S. 19, 31 (2001) (internal quotations omitted). If the statutory words "art" and "process" are limited to any process that "is tied to a particular machine" or "transforms a particular article into a different state or thing," Pet. App. 12a, Congress's inclusion of the word "art" in 1790 (and later "process") would have been superfluous because the broad contemporaneous meaning of "manufacture" already covered at least that much. Under a correct interpretation, however, the addition of "any useful art" did have meaning because, to the extent any ambiguity remained in "manufacture," the addition phrase clarified the breadth of the language and of Congress's intention.

Finally, the government below also argued that the phrase "useful art" (as it exists in the Constitution and as copied into the early Patent Act) should be interpreted narrowly because "usages of the term 'useful arts' contemporaneous with the framing of the Constitution uniformly tie 'useful arts' to manufactures and manufacturing processes, thereby providing strong support for the notion that 'process' must be interpreted in parity with the other statutory categories." PTO Supp. Br. at 10-11. The government is wrong on the history.

It is of course true that manufactures of all types were considered "useful arts," and thus individuals interested in encouraging domestic manufacturing—such as the early industrial advocate and assistant Secretary of Commerce Tench Coxe—could quite correctly describe "progress in the useful arts as having produced improvements in numerous kinds of manufactures, from ships to whips to watches." *Id.* at 11 n.4 (paraphrasing Tench Coxe, *An Address to an Assembly of the Friends of American Manufactures, in Calling for More Domestic Manufacturing* 18 (1787)). It is a logical error to assume that, because all manufacturing arts are useful arts, all useful arts must be manufacturing arts.

None of the historical sources produced by the government below constrain the useful arts *solely to* the processes or arts of manufacturing (narrowly construed), and certainly none limits "useful arts" to those arts that are "tied to a particular machine" or that "transform[] a particular article into a different state or thing." Quite the contrary. For example, in another work, Tench Coxe himself listed the "[m]any curious and valuable inventions and improvements" responsible for the "very rapid progress, and a much wider diffusion in the useful arts and trades" occurring in the young nation. Tench Coxe, *A Statement of the Arts and Manufactures of the United States* 1 (1814). Coxe included improvements in the management techniques and services used by manufacturers and other producers such as "the division of labor in the cultivation of the cane," "the extension and facilitation of communication," and "the extension of the funds of the manufacturers by many of the banks, which are solidly founded and rigidly constituted and administered." *Id.* Coxe listed these management and service improvements indiscriminately with such improvements as "the machine for spliting skins" and "the conversion of fossil coal into a pigment." *Id.*

Coxe considered all of those improvements to fall under the category "Instruments and Agents of Manufactures" (*id.* at xlix), and this points to another flaw in the government's argument. Even if the word "manufacture" in the statute were to be given a very narrow interpretation to include only the production of goods from *raw materials*—a meaning that excludes mining, agriculture, shipping, communications and the service industries[4]—still the concept of "useful arts" was used in a much broader sense to include *at least* all the arts that were useful in supporting and fostering manufacturing. Modern society's greater specializations of function and divisions of labor should not obscure the truth that was evident to Tench Coxe two centuries ago: Even an industry fitting the narrowest meaning of manufacturing, like the modern automobile industry, is dependent upon good communications, information processing, management techniques, banking practices and the service industries generally.

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[4] This more narrow meaning does not appear in the 1785 Johnson Dictionary and it was clearly not the meaning imparted by English judges interpreting the Statute of Monopolies. Yet it is clear that Coxe was imparting a very narrow meaning to "manufactures" because he was encouraging the United States to produce finished goods such as "candles, hats, boots, . . . and various other manufactures," and discouraging concentration on the production of "raw productions," such as "copper, crude sugar" or "other articles of unmanufactured produce." Coxe, supra, at xxi. That more narrow meaning of "manufacture" may have been emerging as a connotation, and by the twentieth century it had become one denotation of the word. See Webster's New International Dictionary, Second Edition, 1499 (1948) (giving as the third definition of manufacture "[a]nything made *from raw materials* by the hand, by machinery, or by art, . . .") (emphasis added). Still, the breadth of the word's traditional meaning—"the making of anything by any agency or process," id. (fourth definition)—endures.

Finally, as even the government's sources demonstrate, the field of "useful arts" was traditionally defined not by the distinction between manufacturing and non-manufacturing, but by the distinction between the "polite" and "useful" arts. PTO Supp. Br. at 11 n.4 (citing W. Kenrick, *An Address to the Artists and Manufacturers of Great Britain* (1774)). That traditional distinction was typically explained as being between arts "designed to please" and arts that "aim to supply human wants." Samuel P. Newman, *A Practical System of Rhetoric* 53 (1827). As one early American writer phrased it:

> What are the useful arts? They are those arts or occupations, which are carried on, with a view to *profit* in contradistinction to such as are pu[r]sued for *pleasure*, which are often called *liberal* or *polite* arts.

Robert James Turnbull, *The Crisis or Essays on the Usurpations of the Federal Government* 55 (1827). *See also* David Spadafora, *The Idea of Progress in Eighteenth-Century Britain* 33 (1990) (concluding that "the polite arts were considered to have pleasure for their goal"). Historical sources quite clearly classified early information-generating arts such as navigation solidly within the useful arts, even though those fields could also be accurately described as falling within the liberal arts. *See id.* Moreover, the distinction between polite and useful arts is not difficult to apply in fields relevant to this case: Communications, business, finance, management and information processing are designed to satisfy real world human wants; they are not part of the polite arts.

2. The 1793 Patent Act.

In 1793, Congress modified the definition of patentable subject matter to be "any new and useful art, machine, manufacture or composition of matter, or any new and useful improvement [thereof]." 1 Stat. 318, 319. Congress thus (i) retained, without change, the broadest words and phrases in the list—"useful art" and "manufacture"; (ii) removed from the list the two of the more narrow words in the list "engine" and "device"; and (iii) added the phrase "composition of matter."

Given the breadth of "useful art" and "manufacture," the wording changes in 1793 do not indicate any change in substantive policy, but the importance of these changes can be understood in light the implications for the canons of statutory construction *ejusdem generis* and *noscitur a sociis.*

Under the *ejusdem generis* canon, broad words following a list of more specific items may be limited to cover only things similar to the more specific. Both the 1790 and 1793 Acts listed the broadest and most general category ("useful art") *first* so the statutes were not classical cases for *ejusdem generis.* Nevertheless, Congress's action in 1793—repeal of two more narrow words and addition of a new broad term[5]—tends to confirm that Congress did not inadvertently include broader language while trying to limit the scope to a more specific category.

Similarly, the canon *noscitur a sociis* generally holds that statutory words may be interpreted in light of associated word elsewhere in the statute. This canon does not mean that "pairing a broad statutory term with a narrow one shrinks the broad one" for "giving one example does not convert express inclusion into restrictive equation." *S. D. Warren Co. v. Maine Bd. of Environmental Protection*, 547 U. S. 370, 379 (2006). Moreover, "*noscitur a sociis* is no help absent some sort of gathering with a common feature to extrapolate." *Id.* at 379-80. Here again, Congress's revision of the statute in 1793 pushed the statutory language away from the narrow and toward the more general so that the most prominent common feature is the breadth of the four categories, coupled with the associated word "any."

3. The 1952 Act.

Congress made three changes to statutory subject matter in 1952:

First, Congress substituted the word "process" for "art" in § 101. Congress, however, retained the word

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[5] "Composition of matter" is broader than "engine" or "device" because devices and engines would literally fit within the new category, but some compositions of matter—e.g., a bacterium (*see, Diamond v. Chakrabarty, supra*), or a new element (*see In re Seaborg*, 328 F.2d 996 (CCPA 1964)—would probably not be considered an "engine" or a "device."

"art" as part of the express statutory definition of "process" given in § 100(b). Thus, as this Court noted in *Diamond v. Diehr*, 450 U.S. 175, 184 (1981), "[a]nalysis of the eligibility of a claim of patent protection for a 'process' did not change with the addition of that term to § 101." A "process" had previously been "considered a form of 'art' as that term was used in the 1793 Act," *id.* at 182, and any such type of "art" remained patentable under the express definition of § 100(b).

Second, Congress also added an express definition of "process," which included the words "process" and "method" in addition to the word "art." The meaning of process at the time was:

> 1. Act of proceeding; . . . procedure; . . . .
>
> 2. A course of procedure; something that occurs in a series of actions or events.

Webster's Second, *supra* note 4, at 1972. And "method" meant:

> 1. An orderly procedure or process, as, orig., of treating disease; regular way or manner of doing anything; hence, a set form of procedure adopted in investigation or instruction; as, a *method* of improving the mind.

Id. at 1548. In short, Congress expressly considered what definition should be given to the new statutory term "process" and used words with ordinary meanings that were consistently broad. If Congress wanted the judiciary to impose a limiting gloss on "process," it gave remarkably little guidance as to the possible content of that gloss.

Third, Congress overturned prior judicial decisions holding that discoveries of new uses for old machines or processes were not patentable subject matter. *See, e.g.*, *Roberts v. Ryer*, 91 U.S. 150, 157 (1875) ("It is no new invention to use an old machine for a new purpose."). The intuition behind that doctrine dated back at least to Thomas Jefferson, who believed "that a machine of which we were possessed, might be applied by every man to *any use of which it is susceptible*, and that this right ought not to be taken from him and given to a monopolist, because the first perhaps had occasion so to apply it."[6] The doctrine had been applied by this Court with varying degrees of stringency,[7] and it had caused much uncertainty. In § 100(b), Congress abolished it by providing that "a new use of a known process, machine, manufacture, composition of matter, or material" must be considered a potentially patentable "process" within the meaning of the Patent Act.

The express inclusion of "new uses" within the definition of patentable subject matter is important because it provides a clear textual basis for an important class of modern inventions. Even 18th and 19th century machines were sometimes (in the words of Jefferson) "susceptible" to different uses, and an inventive "new use" conveyed to the world nothing more than new instructions concerning how to use the existing physical machine. That circumstance has become ubiquitous in an era where modern general-purpose computers are designed to be "susceptible" to many new uses. A new computer program—e.g., a program that manages complex financial transactions or detects financial risks—provides a new way of using an existing machine and thus fits comfortably within the express definition of "process" included in the statute by Congress.

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[6] Letter from Thomas Jefferson to Isaac McPherson (August 13, 1813) (*available at http://etext.virginia.edu/etcbin/toccer-new2?id=JefLett.sgm&images=images/modeng&data=/texts/english/modeng/parsed&tag=public&part=218&division=div1*) (emphasis added).

[7] For the varying application of the doctrine, compare *Roberts v. Ryer*, *supra*, with *Washing-Machine Co. v. Tool Co.*, 87 U.S. 342, 351 (1874) (holding that, at least in circumstances where there was not "any novel and useful result," a "new application" was an unpatentable "case of double use"); and *Busell Trimmer Co. v. Stevens*, 137 U.S. 423, 434 (1890) (holding that a new use *was patentable* at least where the newly discovered use was "an entirely new use").

The text of § 100(b) therefore provides an explicit basis for an important point on which we agree with the government's position in this case: A "machine-based process"—including new uses of existing machines—generally falls within patentable subject matter as defined by Congress. PTO Supp. Br. at 26. We also agree with the government that, under the statute as drafted by Congress, "there is no such thing as a categorical business method exception to the patent system" and that technological innovations should not "go unprotected simply because they operate in a commercial environment." *Id.* at 32.

Because Congress clearly expressed its intent through the "extremely broad" statutory language of the 1790, 1793 and 1952 statutes, *J.E.M. Ag Supply*, 534 U.S. at 130, resort to the legislative history is unnecessary. However, if the legislative history were to be consulted, it would reveal that Congress was fully aware that the language was expansive. Indeed, both House and Senate committees specifically indicated their sweeping understanding of the word "manufacture, which may include anything under the sun that is made by man." H.R.Rep. No.1923, 82d Cong., 2d Sess., 6 (1952); S. Rep. No.1979, 82d Cong., 2d Sess., 5 (1952); *see also Chakrabarty*, 450 U.S. at 182 (quoting these reports). These reports are a good indication that Congress was fully aware that the traditional meaning of "manufacture" in patent law could cover either a product or process (as this Court held in *Merrill v. Yeomans, supra*), and that Congress intended such a literal interpretation of the language.

In sum, Congress has repeatedly selected words with broad ordinary meanings in defining patentable subject matter; has added additional broad words to reinforce the pre-existing words in the statute; has eliminated some narrower words previously in the statute (though words such as "engine" and "device" can be considered narrow only in comparison to the more sweeping words in the statute); and has even overruled part of the narrowing judicial gloss that was once put on the statute.

II. The Federal Circuit, the Government and the Government's Amici Present No Consistent and Coherent Rule for Limiting the Reach of § 101.

The language of § 101 is not vague or uncertain; it is just broad, which is what Congress intended. Even if this Court were predisposed to adding a judicial gloss to that language in common-law fashion (*see* Guido Calabresi, *A Common Law for the Age of Statutes*

(1982)), the glosses being proposed in this case are strikingly unattractive. One immediate problem is that the court below, the government and the various amici have been unable to agree on a single theory to justify and to govern the judicial gloss that is to be imposed on the statute. That lack of agreement provides a good indication whether a clear path will appear once the text of the statute is abandoned. There are other problems too. We focus here on the problems associated with merely two of the potential candidates to be the judicial gloss on the statute.

1. The Machine-or-Transformation Test.

Even if it were considered purely from the standpoint of common-law making, the specific test endorsed by the Federal Circuit—that any patentable process must be either tied to a particular machine or transform a particular article into a different state or thing—has numerous problems.

First, more than a third of a century ago, the government advocated the precise restriction it is advocating again here in this case. *See* Reply Br. for Petitioner at 7-8, in *Gottschalk v. Benson*, 409 U.S. 63 (1972) (No. 71-485). The government relied on the same dicta being cited in this litigation, *id.* at 7 (citing *Cochrane v. Deener*, 94 U.S. 780, 788 (1876)), and argued that patentable processes either (i) had to involve "physical substances on which physical acts are performed," or (ii) had to include "machinery or apparatus limitations" for the processes involving "the manipulation and transmission of intangible entities—such as electrical energy for telecommunications . . .

or information or data processing." *Id.* at 8. The *Benson* Court declined to limit patentable subject matter with that sort of formalistic rule.

Second, after the dicta in *Cochrane v. Deener* was written, this Court defined process in *Tilghman v. Proctor*, 102 U.S. 707, 728 (1880), to be "an act, or a mode of acting"—"a conception of the mind, seen only by its effects when being executed or performed." If Congress were looking to Supreme Court dicta for a comprehensive definition of "process," there is no reason to think that it looked to the earlier *Cochrane* "definition" rather than the later *Tilghman* "definition." Indeed, this Court's later opinion in *Expanded Metal Co. v. Bradford*, 214 U.S. 366 (1909), quoted *both Cochrane* and *Tilghman*, emphasized the breadth of patentable processes, and praised the *Tilghman* formulation as a "clear and succinct statement of the rule" governing process. *Id.* at 384.

Third, even at the time of *Benson*, the "machine-or-transformation" test could not account for all the cases decided by this Court. In *O'Reilly v. Morse*, 56 U.S. 62 (1853), Samuel Morse's fifth claim specifically covered Morse Code, i.e., Morse's "system of signs, consisting of dots and spaces, and of dots, spaces, and horizontal lines, for numerals, letters, words, or sentences, substantially as herein set forth and illustrated, for telegraphic purposes." *Id.* at 86. The examiner from the Patent Office construed the claim to mean:

> The patent of said Morse also secures to him the right to use a system of alphabetical signs, consisting of dots and spaces, and dots,

> spaces, and horizontal lines. Upon careful investigation it did not appear that these signs had ever before been used as an alphabet of language, and the patent was accordingly granted.

S.Ct. Record in *O'Reilly v. Morse*, at 128. The breadth of Morse's fifth claim is made clear by a comparison with his sixth claim, which was limited to uses of the code "in combination with machinery for recording" the coded signals. Yet even though the accused infringer argued that such a code could not be "the subject of a patent," *id.* at 35, *see also* 56 U.S. at 101 (noting arguments by counsel on the patentability of claim 5), the Court sustained the claim, stating that it "perceive[s] no well-founded objection . . . to [Morse's] right to a patent for the first seven inventions set forth in the specification of his claims." *Id.* at 112.[8]

Morse's patent claim on his code was similar to any number of traditional patents issued on coding and notational methods that plainly fail the government's new machine-or-transformation test. *See, e.g.*, U.S. Pat. Nos. 831,061 (1906) (cipher coding system), 429,841 (1890) (musical notation), 198,507 (1877) (phonetic notation method). Those patents also show why patentable methods need not be limited by the machine-or-transformation test. While the government in its briefing below did not articulate any policy rationale for its proposed judicial gloss, the government's briefs in *Benson* at least attempted to do so. The government argued that, without machine-or-transformation limitations, "the scope of the claimed monopoly cannot be determined by the Patent Office or subsequent competitors." Reply Br. in *Benson* at 8. Yet claims such as Morse code provide very clear definitions of the patent's scope, and competitors could easily avoid the patented method if they so desired.

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[8] In discussing claim 3 of Morse's basic patent and his second patent on an improvement, the Court noted that the accused infringer could not escape infringement because Morse's "patent is not for the invention of a new alphabet; but for a combination of powers composed of tangible and intangible elements, described in his specification, by means of which marks or signs may be impressed upon paper at a distance, which can there be read and understood." 56 U.S. at 124. The Court, however, also passed upon the validity of all the claims in the Morse patent—including claim 5—because, at the time, the whole of the patent could be void if the inventor claimed more than he was entitled to. *See id.* at 121.

Finally, a new, judicially created exclusion from patentable subject matter should not be imposed without some consideration of the problems that will arise in administering it. In briefing below, the government acknowledged that it would "not always be simple to draw the line between a statutory process *appropriately* 'tied to a particular apparatus' and a nonstatutory method with nominal recitations of structure." PTO Supp. Br. at 14 (emphasis added). This passage acknowledges that the actual test to be applied will not be a bright line rule but will instead require a standardless assessment of "appropriateness."

Enforcement of a machine-or-transformation test presents a real dilemma for the PTO. If the test is treated formalistically, then it will be easy to evade because sophisticated patent drafters can always or almost always include the necessary limitations in their claims.

Chakrabarty provides a good example of the problem with formalisms in this doctrinal area: In trying to enforce its rule against the patenting of living matter, the government denied Dr. Chakrabarty a patent on his artificial bacteria but had granted him a patent on the living bacteria combined with "a carrier material floating on water, such as straw." 447 U.S. at 306. Thus, the Patent Office's message to Dr. Chakrabarty was that his newly engineered bacterium was not patentable, but with a little added straw, it was. However absurdly formalistic that approach is, it may be more attractive than enforcing the nonstatutory restriction with a functionist approach, which requires further departures from the statutory text, plus the development of an extensive jurisprudence on the degree and appropriateness of the connections with the machine or transformation.

Since it has begun enforcing its machine-or-transformation test, the government has vacillated between the two approaches to this dilemma. For example, the agency has interpreted its machine-or-transformation rule to hold unpatentable process claims that were expressly stated to be "executed in a computer apparatus" because "[a]ny and all computing systems will suffice, indicating that the claim is not directed to the function of any particular machine." *Ex parte Langemyr*, slip op. at 22 (BPAI May 28, 2008) (*available at http://www.uspto.gov/web/offices/dcom/bpai/its/fd081495.pdf*). Similarly another decision reasoned that computerized invention was outside of patentable subject matter because it would "cover any and every possible digital computer for executing the [claimed] transformer program." *Ex parte Snyder*, slip op. at 22 (BPAI May 12, 2009) (*available at http://des.uspto.gov/Foia/ReterivePdf?system=BPAI&flNm=fd20084598-05-12-2009-1*. These decisions threaten to undermine a substantial number of meritorious and valuable patents, even though such inventions seem to fit the statutory definition of a "process" because they provide new uses for existing general purpose computers.[9]

Yet the agency has not been consistent. For example, U.S. Pat. No. 7,426,488 (2008) on a valuation method for private equity investments was issued to two prominent Harvard Business School professors and their co-inventors. The patent used "software-on-a-disk" claiming format to cover a "computer program product, disposed on a computer readable medium," with "instructions for causing a processor" to undertake a certain new financial analysis of private equity investments. *Id.* at col. 10. Such a software invention is of course designed to work on any general purpose computer.

Similarly, in *Ex parte Dickerson*, slip op. at 16 (BPAI July 9, 2009) (*available at http://des.uspto.gov/Foia/ReterivePdf?system=BPAI&flNm=fd2009001172-07-09-2009-1*), the agency sustained the patentability of computerized methods because they "include[d] a step of outputting information from a computer (FF 7 and 9-10) and therefore, are tied to a particular machine or apparatus." Finally, in another case, the agency tried to articulate what appears to be an intermediate position under which claims to computerized inventions would be patentable if the process "uses two computing devices" but not if it "uses a single computer." *Ex parte Wasynczuk*, slip op. at 22 (BPAI June 2, 2008) (*available at http://www.uspto.gov/web/offices/dcom/bpai/its/fd081496.pdf*). Such a test would seem to produce many uncertainties in an era in which even inexpensive computers contain dual processors operating on a single chip (e.g., Intel's Centrino Duo®).

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[9] See, e.g., John F. Duffy, The Death of Google's Patents? (*available at http://www.patentlyo.com/patent/law/googlepatents101.pdf*) (discussing the PTO's enforcement of its machine-or-transformation test and the implications for valuable software patents such as Google's PageRank™ search engine patent).

The uncertainties stemming from the agency's first year of experience with this new test are now widely acknowledged.[10] While the lower courts may attempt to develop this area of law "in the classic old English model,"[11] they will be doing so without any assistance from statutory text. Moreover, even the patent-expert Federal Circuit and its predecessors have demonstrated the difficulty of developing stable common law in this area: The *Bilski* en banc decision is the third attempt in three decades to announce a comprehensive test to govern the judicial limitations on the text of § 101, and each test was abandoned to make way for the new.[12] Patentability tests that cannot survive even half the life of a patent do not instill confidence in the solidity of the property rights system.

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[10] *See* Tony Dutra, *Chief Judge Michel Says Commentary Reading Too Much Into Bilski Opinion*, 78 Pat. Trademark & Copyright J. (BNA) 373 (July 24, 2009) (quoting Chief Judge Michel of Federal Circuit as stating that the BPAI had taken "inconsistent approaches" to the machine requirement since the *Bilski* opinion was published).

[11] *Id.*

2. Business Method Exception.

Various amici and one judge below have suggested that this Court should impose a prohibition on all "business method" patents. This Court was previously presented with a chance to endorse a "business method" exception to patentability. In *Dann v. Johnston*, 425 U.S. 219 (1976), the Court declined to rule on whether a computerized method for maintaining bank records and processing checks constituted patentable subject matter, even though the Government devoted the vast bulk of its briefing to that issue and specifically argued that the process should be unpatentable because "[t]he federal courts have repeatedly held that ideas for methods of doing business are not patentable" and "patents on methods of transacting business would destroy legitimate competition." Br. for Petitioners at 22 n. 18 & 21, in *Dann v. Johnston* (No. 74-1033). The Court declined that prior invitation, and instead focused on the obviousness of the alleged invention, which is often the core problem with patents that thwart legitimate competition.

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[12] The court below disavowed the "useful, concrete and tangible" test first set forth in its last en banc case addressing the issue, *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994) (en banc). *Alappat*, in turn, supplanted the "*Freeman-Walter-Abele*" test, which derived from three cases decided between 1978 and 1982. *See AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1359 (Fed. Cir. 1999) (describing the *Freeman-Walter-Abele* test as having "little value" after *Alappat*).

The arguments for a business method exception have not improved since 1976. For example, in his dissent below, Judge Mayer argued that "the framers were well aware of the abuses that led to the English Statute of Monopolies and therefore 'consciously acted to bar Congress from granting letters patent in particular types of business.'" Pet. App. at 107a (quoting *In re Comiskey*, 499 F.3d 1365, 1375 (Fed. Cir. 2007)). But the history shows that the English Crown was conferring patent monopolies for common pre-existing products such as vinegar, salt, horns, iron, bags, bottles, etc. *See* 1 Walter F. Rogers, *The Law of Patents* 264 (1914) (listing the abusive grants). The problem with these grants was not that they covered business activity—all patents restrict business activity in the same sense that those patents did—but that they covered *existing* products and businesses "which had long before been enjoyed by the public." *Graham v. John Deere Co.*, 383 U.S. 1, 5 (1966). The solution was not to prohibit patents on business methods but to prohibit patents on things that are not *new*.

Modern law provides even more protection against the potentially abusive patents. Under the statutory obviousness doctrine, the courts have an effective tool designed to restrict the patent system to "those inventions which would not be disclosed or devised but for the inducement of a patent." *Id.* at 11. This Court itself has recently re-emphasized the importance of the nonobviousness requirement in eliminating patents that "might stifle, rather than promote, the progress of useful arts." *KSR International Co. v. Teleflex, Inc.*, 530 U.S. at 398, 427 (2007). Thus, given the *Graham/KSR* framework, the relevant policy issue for business method patents is whether patents should be available for new and useful business methods that would otherwise *not* be "disclosed or devised." Even the dissenting judge below presented no policy reason for why society would be better off if certain useful business processes remain unrevealed or undiscovered.

Judge Mayer also argued below that "useful arts" should be construed to mean "technology." Pet. App. at 112a. There are three problems with that line of argument. First, refocusing the inquiry from "art" and "useful arts" to "technology" or "technological" merely substitutes modern words that have similarly broad and perhaps even less well-defined meanings than the statutory language.

In the modern era, technological means "of, relating to, or characterized by technology."[13] Technology, in turn, means variously "the practical application of knowledge in a particular area,"[14] "a manner of accomplishing a task especially using technical processes, methods, or knowledge,"[15] "the science of the application of knowledge to practical purposes,"[16] "the application of scientific knowledge to practical purposes in a particular field,"[17] or a "technical method of achieving a practical purpose."[18] Finally, "technical" means "having special usu[ally] practical knowledge, especially of a mechanical or scientific subject," or "of or relating to a practical subject organized on scientific principles."[19] Thus, one fair definition of technological is "characterized by the practical application of knowledge in a particular field."[20] Under this definition, innovations in business, finance, and other applied economic fields plainly qualify as "technological."

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[13] *Webster's Third New International Dictionary* 2348 (1963); *Merriam-Webster's Collegiate Dictionary* 1206 (10th ed. 2001).

[14] *Id.*

[15] *Id.*

[16] *Webster's Third, supra* note 13, at 2348.

[17] *Id.*

Second, if a more narrow definition were selected—e.g., Judge Mayer preferred to define technology as "application of science, especially to industrial or commercial objectives," Pet. App. 117a—such a definition would seem to exclude whole fields, such as games, in which the United States has issued so many patents that the field has its own major classification and dozens of subclasses. *See* PTO Classification 273 for Amusement Devices: Games (*available at http://www.uspto.gov/web/patents/classification/uspc273/sched273.htm*).

Third and finally, even accepting the narrowest definition of "technology" advanced, modern innovations in business, finance, and the like easily qualify because they represent practical applications of economic science. Economists themselves now view their field as constituting a "mathematical science" with closer affinity to physics and engineering than to liberal arts like English literature.[21] Thus, the winners of the Nobel Prize for "Economic Sciences," established in 1968, are selected by the Royal Swedish Academy of Sciences, the same body responsible for selecting the Nobel Prizes in Chemistry and Physics.[22] By contrast the Nobel Prize for Literature is selected by the Swedish Academy, which describes itself as a "cultural institution."[23] Similarly, the British Royal Society – which has traditionally limited its members to scientists – in 2004 conferred fellowship on its first economist.[24] And what is frequently considered one of the best graduate departments of economics in this country is housed in the Massachusetts Institute of *Technology*.[25]

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[18] *Id.*

[19] *Id.*

[20] This definition is most consistent with the Greek origins of the word, which is a combination of *technikos*, meaning "art, skillful, practical," *Webster's Third*, *supra* note 13, at 2348, and *logos*, meaning "word, reason, speech, account," *Id.* at 1331.

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[21] *See, e.g.*, Giorgio Israel, *How Economics Became a Mathematical Science*, 114 Econ. J. F369 (2004).

[22] *See, e.g.*, The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel, http://nobelprize.org/nobel_prizes/economics/ (noting creation of economics prize); Nomination and Selection of the Laureates in Economics, http://nobelprize.org/nomination/economics/process.html (setting forth selection process).

[23] *See* http://www.svenskaakademien.se/Templates/StartPage2.aspx?PageID=ca2da03d-4623-48a1-9b01-7f450c1b59c7 (the Academy's English-version homepage).

[24] *See Nine Staff Named New Fellows of the Royal Society*, http://www.admin.cam.ac.uk/news/dp/2004060102 (June 2, 2004) (announcing election of Partha Dasgupta).

[25] *See, e.g., http://grad-schools.usnews.rankingsandreviews.com/best-graduate-schools/top-economics-schools/rankings* (showing MIT tied for first in the rankings of economics departments published by US News and World Report).

Furthermore, in the last half century, the industrial reality is that many business problems are being addressed and solved *as problems of applied science and engineering.* This extension of science and engineering was recognized over a half century ago, when Professor Herbert Simon of the Carnegie Institute of Technology noted that the new area of "[n]ormative microeconomics, carried forward under such labels as 'management science,' 'engineering economics,' and 'operations research,' is now a flourishing area of work" and "[m]uch of the work is being done by mathematicians, statisticians, engineers, and physical scientists."[26] By the 1980s, this development had spread to the workplace, with financial firms hiring "mathematicians and physicists" to become the "rocket scientists" of their industry.[27] Now, fields like financial engineering and operations research are so well established that major universities (especially technological universities) have established programs, laboratories and even whole departments of engineering to address business issues in a rigorous manner.[28]

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[26] Herbert A. Simon, *Theories of Decision-Making in Economics and Behavioral Science*, 49 Am. Econ. Rev. 253, 254 (1959).

[27] Winston Williams, *The Big Board Battle to Contain the Damage*, N.Y. Times, Oct. 25, 1987, sec. 3, p. 8.

[28] *See, e.g.*, MIT's Laboratory for Financial Engineering (*http://lfe.mit.edu/about/intro.htm*); Cornell's Financial Engineering Concentration in its School of Operations Research and Information Engineering (see *http://www.orie.cornell.edu/orie/academics/meng/programdescription/options/fineng.cfm*); and Princeton's Operations Research & Financial Engineering Department in the university's School of Engineering and Applied Science (*http://orfe.princeton.edu/*).

The modern growth of business sciences and engineering also explains the limited number of business method patents prior to the late twentieth century and the increase in such patents in modern times. Even in a legal system with no bar to business method patents, such patents will not be sought if parties cannot satisfy the normal requirements of the patent law. Where principles of economics and business are poorly developed and poorly understood, few new true novelties will be developed; fewer still be nonobvious; and fewer still might be capable of being described and claimed in a manner sufficiently clear to satisfy the requirements of § 112 of the Patent Act.

This Court has previously seen a very similar circumstance in *Chakrabarty*. In that case, there was no historical evidence of extensive patenting of living things, and Congress had thought it necessary even to enact a special statute to allow the patenting of plants. In *Chakrabarty*, four Justices opined that this evidence demonstrated both a "common understanding" and "Congress's understanding" that living things were unpatentable. *See* 447 U.S. at 319, 320 (Brennen, J., dissenting). However, the better view—adopted by the majority—was that living things had previously been unpatentable not because they were per se outside of the broad language in § 101 but because, in more primitive times, the cultivators of new varieties of living things could not provide a written description of their creations, including a description of how to make their creations, with sufficient detail and precision to satisfy § 112 of the Patent Act. *Id.* at 312-14.

The case for rejecting a per se exclusion is even stronger here than it was in *Chakrabarty*. Unlike in *Chakrabarty*, historical sources demonstrate that patents on business methods and other business technologies were not unknown even in the nineteenth century.[29] The PTO formally dropped its own per se business method rule in 1995 (well *before* the Federal Circuit's decision in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998)),[30] and the agency had been issuing business method patents for some years prior to its formal abandonment of its per se business method exclusion. And far from passing legislation based on the premise that the relevant subject is unpatentable (as Congress did in enacting the Plant Patent Act), Congress enacted legislation in 1999 based on the assumption that business methods were patentable.

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[29] *See USPTO White Paper, Automated Financial or Management Data Processing Methods (Business Methods)* iv (*available at http://www.uspto.gov/web/menu/busmethp/whitepaper.pdf*) (finding that the "business method claim format has been used in various forms throughout that period" dating back "over a hundred years" and that is has became more common because of "progress over the last century").

[30] *Compare Manual of Patent Examining Procedures* § 701.03(a), 700-14 (6th ed. Jan. 1995) (*available at http://www.uspto.gov/web/offices/pac/mpep/old/E6R0_700.pdf*) (endorsing the business method exception) with *Manual of Patent Examining Procedures* § 701.03(a), 700-28 – 700-29 (6th ed., rev. 1 Sept. 1995) (*available at http://www.uspto.gov/web/offices/pac/mpep/old/E6R1_700.pdf*) (omitting the business method exception).

III. Precedent Does Not Foreclose Reliance on the Text of § 101.

In *Parker v. Flook*, 437 U.S. 584, 589 (1978), this Court held that the holding in *Benson* "forecloses a purely literal reading of § 101." *Flook* does not, however, mean that judicial common-law making must supplant textual analysis in deciding § 101 cases.

This Court's precedents demonstrate that the broad general statutory language remains the primary guide to deciding statutory subject matter cases, and the Court's departures from the text have been extremely modest. This Court has traditionally held that, despite the broad statutory language in § 101, "laws of nature, physical phenomena, and abstract ideas" are not patentable. *Chakrabarty*, 447 U.S. at 309. The first two of these categories presents little, if any, restriction on the plain meanings of the statute. As our historical analysis shows, even the broadest word originally in § 101—"art"—was restricted to the "power of doing something *not taught by nature and instinct.*" 1 *Johnson Dictionary* at n182 (*available at http://www.archive.org/stream/dictionaryofengl01johnuoft#page/n182/mode/1up*) (emphasis added).

The prohibition on "abstract ideas" is also easily reconciled with the text and structure of the statute. Section 101 expressly includes the requirement that patentable processes, methods and arts must be "useful." An abstraction is not. The Patent Act also requires applicants (i) to provide a written description of how to make and use the invention in "full, clear, concise, and exact terms" and (ii) to define the property rights by "particularly pointing out and distinctly claiming" the invention. 35 U.S.C. § 112. Abstract ideas could not satisfy these requirements and therefore are not processes capable of being patented.

Limiting § 101 in the way argued by the government would require a much greater departure from statutory text than that sanctioned in *Church of the Holy Trinity v. United States*, 143 U.S. 457 (1892), which is often thought to mark the outer bounds of this Court's willingness to impose a judicial gloss on broad and controlling statutory text.[31] In *Church of the Holy Trinity*, the Church successfully argued that the broad but clear language of a statute regulating "labor or service of any kind" should apply only to *manual* service and labor. As in this case, the relevant statutory words in *Holy Trinity* had broad, but clear meanings and were modified by the word "any." As in this case, the starting point for imposing a judicial gloss was the assertion that Congress could not have intended a literal interpretation.

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[31] The *Church of the Holy Trinity*'s invocation of statutory "spirit" has been controversial. *See Public Citizen v. U.S. Department of Justice*, 491 U.S. 440, 473 (1989) (Kennedy, J., concurring in the judgment) (rejecting *Church of the Holy Trinity* because "it does not foster a democratic exegesis for this Court to rummage through unauthoritative materials to consult the spirit of the legislation in order to discover an alternative interpretation of the statute with which the Court is more comfortable"); *id.* ("The problem with spirits is that they tend to reflect less the views of the world whence they come than the views of those who seek their advice."); *Zuni Public School Dist. No. 89 v. Department of Education*, 550 U.S. 81, ___ (2007) (slip op. at 11) (Scalia, J., dissenting) (criticizing *Church of the Holy Trinity* for "disregard[ing] the plain text of a statute" and observing that "what judges believe Congress 'meant' (apart from the text) has a disturbing but entirely unsurprising tendency to be whatever judges think Congress must have meant, *i.e.*, *should* have meant") (emphasis in original).

Beyond those basic similarities, however, this case includes numerous factors not present in *Church of the Holy Trinity.* Here, unlike in *Holy Trinity*, the statute has been in place for hundreds of years, and Congress has done nothing other than to *add* broad language to the existing broad language. Here, unlike in *Holy Trinity*, the key statutory term ("process") has an express definition, which contains other broad but clear words. Here, unlike in *Holy Trinity*, the relevant statutory language underscores Congress's understanding that the language in the statute is sweeping broad. By contrast, in *Holy Trinity*, some congressional reports expressly stated that legislators "believ[ed]" the language would be construed narrowly to encompass only labor "manual in character." *Id.* at 464.

Finally, in *Holy Trinity*, the statute already contained several exceptions, all of which tended to confirm that Congress's overarching policy was more limited. In the Patent Act, however, Congress has maintained a long tradition of broadly defining patentable subject matter. Rather than restricting patentable subject matter, Congress has adjusted the rights applicable to certain classes of patents. *See, e.g.*, 35 U.S.C. §§ 181-188 (imposing certain restriction on patents for inventions that may be detrimental to the national security); § 287(c) (restricting remedies for patents for surgical methods). Congress has already made one such adjustment to accommodate business method patents. *Id.* § 273. In these circumstances, the case for a departure from the literal language of the statute is extraordinarily weak.

IV. The Decision in this Court Should Be Limited to the Questions Presented.

Bilski's claims are properly categorized as a "method" for managing certain types of risk in the purchasing of commodities, and they therefore fall within the literal language of a process as defined by Congress in § 100(b). To satisfy § 101, however, Bilski's claimed method must not be an abstract idea, physical phenomenon, or principle of nature (limitations that *are* reflected in the text and structure of the Patent Act).

In the Court of Appeals, the PTO argued in the alternative that Bilski's claims failed to qualify as patentable subject matter because they were abstract ideas. We take no position on that issue but note one final point.

Whether Bilski's particular invention is an unpatentable abstract idea is not fairly included within the questions presented here, was not decided by the court below, had not been the focus of briefing in this Court, and is a fact-bound question of little importance to the patent system. Accordingly, there are strong prudential reasons for this Court to limit its decision to the questions presented.

CONCLUSION

The Court should reverse the decision below and remand the case to the Court of Appeals.

Respectfully submitted,

JOHN F. DUFFY
Counsel of Record
FRIED FRANK HARRIS SHRIVER
& JACOBSON LLP
1001 Pennsylvania Ave., N.W.
Washington, DC 20004
(202) 639-7000

JOHN A. SQUIRES
WALTER G. HANCHUK
CHARLES M. FISH
JOHN KHEIT
CHADBOURNE & PARKE LLP
30 Rockefeller Plaza
New York, NY 10112
(212) 408-5100

Attorneys for Amici Curiae

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CURIAE
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In The
Supreme Court of the United States

◆

BERNARD L. BILSKI and RAND A. WARSAW,

Petitioners,

vs.

JOHN J. DOLL, ACTING UNDER SECRETARY
OF COMMERCE FOR INTELLECTUAL
PROPERTY AND ACTING DIRECTOR,
PATENT AND TRADEMARK OFFICE,

Respondent.

◆

On Writ Of Certiorari To The
United States Court Of Appeals
For The Federal Circuit

◆

BRIEF OF ROBERT R. SACHS AND DANIEL R. BROWNSTONE AS *AMICI CURIAE* IN SUPPORT OF NEITHER PARTY

◆

ROBERT R. SACHS
Pro Se
DANIEL R. BROWNSTONE
Pro Se
555 California Street
Suite 1200
San Francisco, CA 94104
(415) 875-2410

COCKLE LAW BRIEF PRINTING CO. (800) 225-6964
OR CALL COLLECT (402) 342-2831

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QUESTIONS PRESENTED

1. Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

2. Whether the Federal Circuit's "machine-or-transformation" test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273.

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INTEREST OF *AMICI CURIAE*[1]

Robert R. Sachs[2] is a patent attorney, with seventeen years of experience prosecuting software patents for high technology software and companies in the Silicon Valley. Mr. Sachs has been responsible for crafting patent strategies for a wide range of software inventions, including search engines, user interfaces, databases, networking protocols, encryption, compression, video codecs, interactive television, predictive modeling systems, as well as inventions related to e-commerce, financial services, financial instruments, and financial analytics. Mr. Sachs is also an inventor on several patents. Mr. Sachs is a frequent writer and speaker on patent law issues pertaining to software and business methods. Finally, Mr. Sachs is the primary patent evaluator for a number of patent pools covering a variety of audio, video, interactive cable, telecommunications, and wide-area networking standards.

Daniel R. Brownstone is a patent attorney and inventor, working for the past decade with numerous companies in the software, communications and bioinformatics industries. Mr. Brownstone guides startups and public companies in developing and managing patent protection programs to identify and protect their core software and business technologies in this country and abroad. Mr. Brownstone is also an adjunct professor of law, and a frequent speaker on topics involving developments in patent law and practice.

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[1] No part of this Brief was authored in whole or in part by any of the parties. No monetary contributions to fund the preparation or submission of this Brief were made by anyone other than the *Amici*.

[2] In compliance with Sup. Ct. R. 37.2(a), timely notice of *Amici's* intent to file this Brief was given to counsel of record for both parties, and consent granted by both parties. This Brief is being filed with the consent of the parties. The parties have also filed with the Clerk of this Court general consents to the filing of *amicus* briefs.

By the nature of their concentration on software and financial clients,[3] *Amici* have deep experience with how inventors, patent examiners, and the courts approach the question of patent eligibility.

As students of the patent law and 35 U.S.C. § 101 in particular, *Amici's* interest in this case is two-fold: First, to illustrate the potential impact of the Federal Circuit's machine-or-transformation test on software-related inventions; and second, to provide a framework for analysis of patent eligibility that relies on the basic principles of patent law and a philosophically and scientifically sound approach to the nature of software innovations and software process claims.

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[3] *Amici* submits this brief *pro se*, and the views expressed here are not necessarily those of their firm or clients.

INTRODUCTION AND SUMMARY OF ARGUMENT

This Court has long recognized that the patent eligibility statute, 35 U.S.C. § 101 ("§ 101"), should be read broadly, with limited exceptions. These limited exceptions include processes claiming laws of nature, scientific phenomena or abstract intellectual ideas. These exclusions apply to inventions and discoveries of the modern Information Age just as surely as they did to those of the Industrial Age. The challenge is to "establish rules that enable a conscientious patent lawyer to determine with a fair degree of accuracy which, if any, program-related inventions will be patentable." *Diamond v. Diehr*, 450 U.S. 175, 219 (1981) (Stevens, J., dissenting).

The Federal Circuit's machine-or-transformation test, derived from this Court's decisions, is certainly *a* test for identifying patent-eligible subject matter. But it cannot be, as the Federal Circuit held, the *only* test. Such a requirement is not only inconsistent with the precedent of this Court, but fails to recognize that a "one-test-fits-all" rule cannot be easily applied across the three categories of exclusion – laws of nature, scientific phenomena, and abstract ideas. Even within a single category like abstract ideas, a single rigid test is not easily conformed to the vast array of technologies from which innovation springs.

Software inventions are an important illustrative example of why the machine-or-transformation test should not be the definitive test for patent eligibility.

Software inventions have long been recognized as deserving of patent protection, and it is software innovation that drives much of the modern economy. But software, by its very nature, abstracts from the physical world, both in its design and operation. To the extent that there is a test for whether a software process claim is patent eligible, that test must be able to distinguish between claims for purely *abstract intellectual ideas*, which are not patentable, and claims that use *abstractions* to achieve results having meaningful "real world" applications, which are patent eligible.

Amici take no position on whether claim 1 of Bilski's application, or so called "business methods," are patent eligible. Rather, *Amici's* concern is that the machine-or-transformation test threatens to undermine patent protection for software. Even though the Federal Circuit declined "to adopt a broad exclusion over software," in the short time since their decision, the machine-or-transformation test has been applied to software inventions in contradictory and inconsistent manner at every level of the patent system: by patent examiners, by the Board of Patent Appeals and Interferences,[4] and by

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[4] *Compare Ex parte Borenstein*, No. 2008-3475, 2009 WL 871128 (B.P.A.I. Mar. 30, 2009) (information stored in a database provides sufficient structure to meet machine prong); *Ex parte Greene*, No. 2008-4073, 2009 WL 1134839 (B.P.A.I. Apr. 24, 2009) (recitation of "vector processor" insufficient); *Ex parte Koo*, No. 2008-1344, 2008 WL 5054161 (B.P.A.I. Nov. 26, 2008)

(Continued on following page)

various District courts.[5] The Federal Circuit's new test disturbs the settled expectations of the software industry by calling into question the validity of tens of thousands of issued patents – protection that such inventions have enjoyed under this Court's broad understanding of patent-eligible subject matter.

The machine-or-transformation test should not be the only tool to test patent eligibility, because not every invention in every field will fit the same mold. Rather, the Court can reaffirm the law of patentable subject matter in its broad, open-ended form, recognizing the different technological contexts in which process claims appear. Applying a variety of balancing factors provides the flexibility necessary to leave "room for the revelations of the new, onrushing technology," *Gottschalk v. Benson*, 409 U.S. 63, 71 (1972).

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(recitation of a "relational database management system" insufficient).

[5] *DealerTrack, Inc. v. Huber*, 2009 U.S. Dist. LEXIS 58125 (C.D. Cal. July 7, 2009); *Cybersource Corporation v. Retail Decisions, Inc.*, 2009 U.S. Dist. LEXIS 26056 (N.D. Cal. Mar. 27, 2009); *compare Versata Software, Inc. v. Sun Microsystems, Inc.*, 2009 WL 1084412 (E.D. Tex. Mar. 31, 2009).

ARGUMENT

I. THE RISK TO SOFTWARE INNOVATION FROM THE FEDERAL CIRCUIT'S MACHINE-OR-TRANSFORMATION TEST

The primary concern of this case is what appears to be an overly broad patent claim, potentially giving the patentee a greater exclusive right than he deserves. The Federal Circuit was attempting to determine whether Bernard Bilski's claim was nothing more than a claim for an "abstract intellectual concept." *In re Bilski*, 545 F.3d 943, 952 (Fed. Cir. 2008). That court attempted to find a single test that embodied this Court's prohibition against patents claiming laws of nature, natural phenomenon, and abstract ideas. But this Court has recognized the difficulty in resolving questions like this, and has cautioned against assuming that even its own multiple different approaches are dispositive: "We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents." *Gottschalk v. Benson,* 409 U.S. 63, 71 (1972); *see also Bilski*, 545 F.3d at 979 (Newman, J., dissenting) ("Nonetheless, the Federal Circuit now so holds").

The Federal Circuit unfortunately did not perceive the larger view that this Court has had. In answering the narrow question before it, the Federal Circuit turned this Court's identification of two possible *sufficient* conditions – that a process claim is patentable *if* it transforms its subject matter to a different state or thing or *if* it is machine implemented – into *necessary* conditions, that such a claim is patentable *if and only if* it is either machine implemented or performs this transformation. The Federal Circuit took what this Court described in *Benson* as the "clue"[6] to patentability, *id.*, and turned it into a "definitive test." This legal legerdemain has been exhaustively analyzed by others, and that analysis will not be repeated here. *See In re Bilski*, 545 F.3d at 979 (Newman, J., dissenting); *id.* at 1012 (Rader, J., dissenting).

The machine-or-transformation test is not an incorrect test, but it is a limited one. If a process claim meets the machine-or-transformation test, then the claim is patent eligible. However, the converse is not true: if a claim fails the machine-or-transformation test, it should not be automatically deemed patent ineligible. Indeed, the test fails to encompass many software innovations that have traditionally been considered patent eligible, as illustrated below.

A. The Federal Circuit's Test Does Not Encompass Many Software Innovations

Software innovation covers such diverse fields as operating systems, memory management, computer programming languages, communications protocols, networking topologies, databases, information retrieval, graphics processing, video processing, color processing, fonts, animation, word processing, email applications, web browsers, navigation systems, and of course, graphical user interfaces. The U.S. Patent Classification System has over one thousand specific classes directed to software and computer related inventions. Any test for patent eligible process claims should take into account this diversity.

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[6] A clue is "the information or key that guides through an intricate procedure or a maze of difficulties" Webster's Third New International Dictionary (1986).

Significant problems in applying the machine-or-transformation test to software inventions arise from the transformation prong of the test. The Federal Circuit recognized that electronic signals and electronically-manipulated data are "the raw materials of many information-age processes" *In re Bilski*, 545 F.3d at 962, and stated that "transformation" could under at least some circumstances include transformation of data that is representative of physical and tangible objects. *Id.* at 962-63.[7]

But a narrow construction of the test to require that the data being transformed always represent macroscopic physical and tangible objects – objects that can be seen and touched – ignores the reality that many useful software inventions use and transform data that does not have clear tangible correlates. Rather, many software applications operate on data representing *information* instead of physical objects, and it is the transformation of that information that provides the ultimate practical application of the software – the practical application that this Court has identified time and again as a touchstone of patentability. Several examples illustrate this point.

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[7] In the court's example, the data was transformed into a visual depiction on a display. *Id.* The court did not clarify whether the visual depiction itself was required to meet its test, or whether transforming data representative of physical objects without subsequent display would have been sufficient.

1. Graphical User Interface Inventions

A "graphical user interface," or GUI, refers generally to the way in which people interact with modern personal computers and other electronic devices. The Microsoft Window XP and Linux operating systems are each examples of software that provide GUIs. Since the mid 1960s, the U.S. Patent and Trademark Office ("PTO") has granted over 22,000 patents in the GUI field.[8]

A GUI's underlying functionality is what makes it more than just pictures behind glass. Using a mouse to drag a file from one folder to another is a simple example of the relationship between a GUI's visual components and its underlying functionality. GUIs are typically protected with process claims that describe those functional operations. GUIs play a vital role in differentiating products in the marketplace, and patent protection for new and useful functionality provided by GUIs is thus important to software industry.

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[8] GUIs are part of class 715 of the U.S. Patent Classification System. User interface inventions are also found in a variety of other classes.

Under the machine-or-transformation test's transformation prong, data being transformed must be representative of physical objects. But it is unclear what data must be displayed in a GUI to be considered "representative," and which "physical tangible objects" have to be represented. For example, it is common now to describe files stored on a computer as being in different "folders." But clearly there are no physical folders inside a computer, nor could one locate a "trash can" or "recycle bin" on a hard drive. Each of these is an abstraction of the way computers store information; they are not themselves "physical tangible objects." Under the machine-or-transformation test, however, these abstractions may be fatal to patent eligibility.

An "abstraction" is not the same as an "abstract intellectual idea."[9] Software designers and programmers regularly use abstractions to represent the objects, functions and interactions that make up modern computing. The abstraction of a "folder" is useful to represent something that stores a number of distinct "files" or "documents." This does not, however, make a "folder" merely an abstract intellectual idea.

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[9] *See* discussion *infra* Part II.C.

To be sure, a "document" shown on the screen can be printed and thus become a tangible piece of paper. But if a "document" is created electronically and never printed, it cannot represent a physical object, because the physical object does not and will never exist – and yet, surely, the document is more than an abstract intellectual idea.

Similarly, under the machine-or-transformation test, it is not clear what counts as a "transformation" of data in a user interface. To the user, being able to edit a document, construct a spreadsheet, design a web page, or even search the Internet for documents, all are useful operations that take a given state of the world, and upon user input, change that state in some degree, however small. The machine-or-transformation test imposes an unguided qualitative assessment of whether such a transformation is "good enough."

That process claims to user interfaces may be novel and useful, and yet excluded under the Federal Circuit's test, illustrates that test's unsuitability to software applications. Intended by the Federal Circuit to be applied generally to all technologies, it fails to appreciate the nuances of any.

2. Color Processing Inventions

Output devices, such as computer monitors, television screens, printers, and projectors cannot yet output (e.g., display, print, or project) the entire range of colors that humans can perceive. The portion of the color space that a particular device can output is called its color gamut.

Digital images are represented by pixels, and each pixel has a set of data values that represent the "color" of the pixel. In many images, pixels have colors that are "outside" the gamut of the device the pixels are being shown on. To create the best possible output for a given image, it is necessary to determine how to change the original color values of the pixels into color values that the device can output. The particular process (algorithm[10]) selected for the transformation impacts the final quality of the output image. Solutions to this problem are useful in fields as diverse as medical imaging, digital cameras, and high-definition broadcasting of football games. There are over 500 patents that address various aspects of solving this problem.

A narrow construction of the machine-or-transformation test could find claims on innovative color gamut mapping solutions unpatentable as neither tied to a particular machine, nor transformative of data representing physical objects. First, algorithms used to solve the color gamut problem can be executed on a variety of computers and processors, and thus need not be tied to a "particular machine" other than a general-purpose computer.

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[10] There is considerable case law about "algorithms." An algorithm is a specific sequence of operations or steps that accomplish a task. Not all algorithms are "mathematical algorithms," which are algorithms that are solely mathematical operations. *In re Freeman*, 573 F.2d 1237, 1246 (C.C.P.A. 1978) ("Because every process may be characterized as "a step-by-step procedure * * * for accomplishing some end," a refusal to recognize that Benson was concerned only with mathematical algorithms leads to the absurd view that the Court was reading the word "process" out of the statute.") (emphasis in original). Algorithms *per se* do not exist in nature, they are created by humans to achieve tasks.

Second, *Bilski's* requirement that data represent physical tangible objects seems misplaced: the data here represents the "color" of pixels. The numerical representation of color is not what most people would consider "physical and tangible."[11]

Third, if the test requires a claim to recite that the resulting transformation is *displayed*, then this rule ignores two significant facts: that the algorithms can be used for conversion without display, and more importantly, for infringement purposes, that the entity that performs the color conversion may not be the entity that outputs the image. For example, a first company may perform a pre-processing service, which performs the appropriate conversion and stores it on disk. A second company later purchases the converted data and displays it. By requiring a claim to the conversion technology to include the displaying step, both parties described above would avoid any liability for infringement. *See BMC Resources, Inc. v.*

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[11] Of course, scientifically, color in the sense of light exists as photons, and electromagnetic waves, which have measureable physical properties.

Paymentech, L.P., 498 F.3d 1373 (Fed. Cir. 2007) (no direct infringement where multiple parties individually performed only limited steps of the process claim).

3. Encryption and Compression Algorithms

Data compression algorithms are what make it possible to store 7,000 songs on a digital audio player, a full-length motion picture on a DVD, and 1,000 photographs on a memory card. Data compression algorithms generally operate by identifying statistical patterns that occur in the data being compressed. By replacing some of these patterns with shorter patterns, the original file is "transformed" into the compressed file, which uses up less space in memory or on disk.

Encryption algorithms secure everything from ATM machines transactions to military communications to Internet transactions, including e-commerce online banking, and securities trading. Encryption algorithms make data files unreadable by those without the means to undo the encryption.

Many of these compression and encryption algorithms are agnostic as to the "meaning" of the data they are transforming, and do not require that the data represent tangible objects. What the data represents is irrelevant: a simple compression algorithm will compress an image of an elephant, as well as the full text of James Joyce's *Ulysses*, or a spreadsheet of random numbers. An encryption algorithm will secure the contents of a DVD just as effectively as it will protect a set of passwords. But under the Federal Circuit's rule, these algorithms would be patent eligible only if the underlying data represents physical tangible objects, and not where the data represents letters and numbers without a tangible analogue – even though the algorithm processes both sets of data in exactly the same manner. If, as here, the innovation is in the mechanism – or algorithm – for compressing or encrypting, then a test for eligibility that depends on what underlying data is being compressed or secured neither furthers the advancement of the technology, nor meaningfully tests whether the subject matter is directed only to an abstract idea.

With respect to the machine prong of the test, like the color management algorithms, these algorithms do not rely for their effectiveness on a specific physical device, but can be employed by general purpose computers. Decisions since *Bilski* have held that a general purpose computer is not sufficient to meet the machine prong of the Federal Circuit's test. *See, e.g.*, *DealerTrack, Inc. v. Huber*, 2009 U.S. Dist. LEXIS 58125, at *12-13 (C.D. Cal. July 7, 2009) ("Under *Bilski* and the recent decisions interpreting it, the central processor in this case cannot constitute a 'particular machine'").

Thus, there are many software innovations that are new, useful and deserving of patent protection, but which would be excluded if the machine-or-transformation test were the sole basis for determining eligibility.

B. The Risk to Software Innovation from The Machine-or-Transformation Test

The above examples of software innovations are broadly representative of the wide range of software innovations in the following ways:

- They solve problems that only arise from human innovation in the first place: graphical user interfaces solve the problem of how to interact with a computer; color management solves the problem of how to output images on devices created by humans; encryption and compression solve the problem of how to store and secure digital data on human-created devices;
- They provide useful benefits even when the data they act on does not represent physical tangible objects;
- They do not require the visual depiction of data that represents physical objects in order to provide useful benefits.

Thus, if the sole test remains that a patent-eligible process must transform data representative of physical objects or be tied to a machine other than a general-purpose computer, many inventions already patented and many yet to come would be without protection. The risk of invalidation of existing software disrupts the settled expectations of those inventors who pursued – and obtained – patent protection prior to the *Bilski* decision. To limit patentability so narrowly would discourage innovation in some of the fields most important to our modern economy.

II. A SYNTHETIC APPROACH TO SECTION 101 AND SOFTWARE PROCESS CLAIMS

A. Section 101 Is Not a Needle to Be Threaded

Section 101 implements the Constitutional invitation of Article I, Section 8, Clause 8, as an open call to all inventors to come forward with their discoveries in exchange for an exclusive right. Section 101 defines the scope of protection for what by definition is now unknown and cannot be foreseen – inventions that have not yet come to be.

While its limited exclusions turn away at the outset those claims to the scientific principles and abstract intellectual ideas that are free to all, the remainder must withstand the tests of novelty, nonobviousness, and enablement provided by other sections of the Act. It is there that overly broad claims are best identified and challenged.

Section 101 is too blunt an instrument with which to consistently differentiate between a patent claim that is properly broad, and one that is overly broad. A patent claim can be so broad that it reads on the past, and hence is not novel.[12] Alternatively, a patent claim can be so broad that it reads on the unknown future, capturing something that the inventor has not yet invented – in which case the patentee has failed to fully enable his invention. The appropriate way to prevent these types of overly broad patents is application of the statutory requirements for novelty, non-obviousness, and enablement. Section 101 is also a poor tool for differentiation if only because humans cannot foresee – let alone judge well – what will be invented tomorrow. What we can do is make judgments based on evidence from the past and the present, and this is precisely what §§ 102, 103 and 112 allow us to do.

There will always be cases of patent applications seeking claims on subject matter that exists outside the reach of human ingenuity. How else will the boundary of knowledge and invention be advanced if it is not occasionally pushed? The *Benson* Court was sensitive to this conundrum, and made clear that it was leaving "room for the revelations of the new, onrushing technology." *Benson*, 409 U.S. at 71.

To balance these concerns – between overreaching rights of inventors and the need to keep the door open to future innovations, this Court should maintain the framework that it has adopted over the past 100 years, using a mode of analysis based not on bright line rules and talismanic formulations, but guided by first principles of patent law.

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[12] Indeed, *Benson* hinted at precisely that: "Here the 'process' claim is so abstract and sweeping *as to cover both known* and unknown uses of the BCD to pure-binary conversion." *Benson*, 409 U.S. at 69 (emphasis added).

B. A Single Test Cannot Be Used to Identify Unpatentable Claims to Laws of Nature, Natural Phenomena, and Abstract Intellectual Ideas

The difficulty of determining patent eligibility under § 101 and its predecessors is evidenced by the numerous doctrines that have been adopted by this Court, the Federal Circuit, and its predecessor, the Court of Customs and Patent Appeals, over the last 200 years. The multiple doctrines evince the need for a flexible framework that can accommodate the wide variety of different issues presented by patent claims at the boundary of ingenuity and the margins of invention.

Many courts have treated the exclusions from patent-eligible subject matter – laws of nature, natural phenomena, and abstract ideas – as one and the same, even though the case before them implicated only a single one of these categories. As Justice Breyer observed in *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.,* these are three different categories, and difficult to define precisely. 548 U.S. 124, 134 (2006) (Breyer, J., joined by Stevens and Souter, JJ., dissenting from dismissal of writ of certiorari). Logically, different categories of subject matter must be treated using different considerations. Indeed, apparatus claims are treated differently from process claims for purposes of § 101 analysis – so too must claims that implicate a law of nature, for example, be treated differently from those that implicate an abstract intellectual idea.

Even accepting Justice Breyer's caveat, some basic differences between the categories can be noted. "Law of nature" evokes a sense of immutable, universal, generalized rules of how the universe – or "Nature," or "reality" – works.[13] The laws and constants of physics, Maxwell's equations for electromagnetic fields, the speed of light, and pi are illustrative. By contrast, "natural phenomenon" connotes a naturally-occurring physical event or condition, not produced by humans. Lightning, tornadoes, the aurora borealis, the 17-year cycle of the cicada, solar eclipses and the "green flash" are all examples of natural phenomena. These two categories are quite different in kind: the former captures the eternal, the fundamental aspect of reality, while the latter captures events that occur in the physical world, and that are contingent upon the particulars of geography, biology, physics, etc. Natural phenomena certainly comport with the laws of nature, but they are not themselves laws of nature.

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[13] A law of nature is "a generalized statement of natural processes; one of chief generalizations of science variously conceived as imposed upon nature by the Creator, as representing an intrinsic orderliness of nature or the necessary conformity of phenomena to reason and understanding." Webster's Third New International Dictionary (1986).

The Federal Circuit incorrectly assumed that the three categories of exclusion could be treated as one, under the gloss of a "fundamental principle." *In re Bilski*, 545 F.3d at n.5 ("As used in this opinion, 'fundamental principle' means 'laws of nature, natural phenomena, and abstract ideas'"). That error was compounded by a misstatement of this Court's precedent. *Id.* at 954 ("The Supreme Court, however, has enunciated a definitive test to determine whether a process claim is tailored narrowly enough to encompass only a particular application of a fundamental principle rather than to pre-empt the principle itself").

The Federal Circuit's assumption ignores the very diverse manifestations of these categories and how they may arise in process claims. A test that perhaps captures a process claim for a law of nature itself – by identifying its inclusion of a fundamental construct of physics and nothing more – would hardly do well to identify a claim for nothing more than a transient event or a naturally occurring substance.

Similarly, an abstract idea is not inherently a law of nature or natural phenomenon, and so claims that seem too abstract must be treated with their own appropriate considerations. Of these three areas, the one that most directly impacts the patentability of software is the exclusion of abstract intellectual ideas.

C. Broad Software Process Claims Are Not Inherently Unpatentable Abstract Ideas

Claims by definition are *abstractions* and necessarily so. This has been long recognized:

> The difficulty which American courts . . . have had . . . goes back to the primitive thought that an "invention" upon which the patent gives protection is something tangible. The physical embodiment or disclosure, which, in itself is something tangible is confused with the definition or claim to the inventive novelty, and this definition or claim or monopoly, also sometimes called "invention" in one of that word's meanings is not something tangible, but is an abstraction. *Definitions are always abstractions.* This primitive confusion of "invention" in the sense of physical embodiment with "invention" in the sense of definition of the patentable amount of novelty, survives to the present day, not only in the courts, but among some of the examiners in the Patent Office.

E. Stringham, *Double Patenting,* Washington D.C., Pacot Publications (1933) (emphasis added).

There is a difference between an *abstract idea* and an *abstraction*: An *abstraction* is a generalization, it is a definition that identifies the principle aspects or features of the concept. The concept of "dog" is itself an abstraction from the details of any specific dog. But a "dog" is clearly not an abstract *intellectual* idea.

Given that philosophers have debated the nature of abstract ideas for more than 2000 years – the problem of universals – it is not surprising that the Federal Circuit did not cut this Gordian Knot. Nor does *Amici* presume to set forth a definitive framework for analysis. Rather, *Amici* attempts to set forth a sufficient basis for aiding the Court in distinguishing between claims for abstract intellectual ideas and claims that are merely broad in scope.

All human language – and all patent claims – make use of concepts. Concepts such as "house," "dog," "red," and "father" are used to reference physical objects, their attributes, and relationships. We understand what the word dog means, because we generalize from our experience with individual dogs. In philosophical terms these concepts are called "concrete concepts." The other class of concepts involves abstract concepts. "Equality," "fairness," "justice," and "humility" are abstract intellectual ideas pertaining to humans and social relationships. Mathematics is one domain of abstract ideas, with prime numbers, groups and sets, and the Pythagorean Theorem, being simple examples. Thus, "dog" may be an abstraction, but it is certainly not an "intellectual" one. The concern of this Court has properly been on abstract *intellectual* ideas – ideas, the core meaning of which is not simply a generalization of the attributes of physical objects and experiences, but rather ideas that do not have any physical representation in the world.

Software process claims – even when they do not recite real world-entities – are not claims to *abstract intellectual ideas*. Rather, software process claims describe an invention in the very same manner that computer programmers develop computer programs. Computer programs use abstractions to define the relevant characteristics and features of the data and the operations of the program. Software process claims also use abstractions – indeed sometimes the very same abstractions as in the computer program – to define the relevant steps of the invention. Just as a computer program itself will not be an abstract intellectual idea, so too a software process claim does not inherently describe an abstract intellectual idea.

There is a difference between a broad process claim and a claim that is for an abstract intellectual idea. A broad claim is acceptable, and may protect patentable subject matter, as long as it is definite and supported by the disclosure. Only where the subject matter of the claim *as a whole* is directed to intellectual ideas of the type described above would it fail to be patent eligible.

And this is the actual teaching of the historical patent law cases that were thought to invalidate claims as unpatentable subject matter. Instead, this Court's jurisprudence can be explained not as rejecting claims as nothing more than "abstract" *per se*, but rather as filtering out claims that were abstract in the sense of being so overly broad that they were anticipated, indefinite or lacking enablement.

D. Selected Historical Cases: *Le Roy, O'Reilly, Corning,* and *Tilghman*

Several early Supreme Court cases that touch upon patent eligibility and are often cited in the modern case law are *Le Roy v. Tatham*, 55 U.S. 156 (1852); *O'Reilly v. Morse*, 56 U.S. 62 (1853); *Corning v. Burden*, 56 U.S. 252 (1853); and *Tilghman v. Proctor*, 102 U.S. 707 (1880). Although these cases touch on patenting abstract ideas, their actual holdings did not in fact turn on that issue.

Both *Benson* and *Diehr* cite *Le Roy* for the proposition that "A principle, in the abstract, is a fundamental truth; an original cause; a motive; and these cannot be patented, as no one can claim in either of them an exclusive right."[14] *Le Roy*, 55 U.S. at 175. The actual holding of *Le Roy* is that the trial court erred in instructing the jury that it was not to consider the novelty of Tatham's machinery when judging whether the patent was valid: "We think there was error in the above instruction, that the novelty of the combination of the machinery, specifically claimed by the patentees as their invention, was not a material fact for the jury." *Id.* at 177. The *Le Roy* Court did not hold Tatham's patent invalid for covering a "principle," rather it sent the patent back to the jury to determine whether the claim was invalid for want of novelty. Thus, the question of whether the patent claim was for an abstract principle did not arise in *Le Roy*.

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[14] This statement was dicta and expressly so, as the Court firmly stated that the issue of whether "The newly discovered principle, to wit, that lead could be forced, by extreme pressure, when in a set or solid state, to cohere and form a pipe, was not in the patent, and *the question whether it was or was not the subject of a patent was not in the case.*" *Le Roy*, 55 U.S. at 171 (emphasis added). The quoted language itself came from the trial court, which specifically admonished the jury that "The word 'principle' is used by elementary writers on patent subjects, and sometimes in adjudications of courts, with such a want of precision in its application, as to mislead." *Id.* at 174.

The *O'Reilly* Court states that a patent on "principle" would be "void because the discovery of a principle in natural philosophy or *physical science*, is not patentable." 56 U.S. at 116 (emphasis added). The context makes clear that the use of "principle" is in reference to universal laws or "scientific principles," *id.* at 107, in other words, laws of nature, rather than "abstract ideas." The *O'Reilly* Court in fact decided the validity of the patent by what today would be understood as a failure of enablement under § 112:

> In fine, *he claims an exclusive right to use a manner and process which he has not described and indeed had not invented*, and therefore could not describe when he obtained his patent. The court is of opinion that the claim is too broad, and not warranted by law.

O'Reilly, 56 U.S. at 113 (emphasis added).

> Now in this case, *there is no description but one, of a process by which signs or letters may be printed at a distance. . . .* The words of the acts of Congress above quoted show that no patent can lawfully issue upon such a claim. For *he claims what he has not described in the manner required by law.*

Id. at 120 (emphasis added).

In contrast, in *Tilghman*, the process claim was patentable – yet the breadth of Tilghman's claim is astounding to the modern reader:

> I claim as of my invention, the manufacturing of fat acids and glycerine from fatty bodies by the action of water at a high temperature and pressure.

102 U.S. at 709.

This claim is no different in form from Morse's invalid claim in *O'Reilly*, as it describes the desired effect – manufacturing of fats and glycerine as compared to Morse's "making or printing intelligible characters" – by a generic mode of operation – the action of water at high temperature and pressure as compared to Morse's "motive power of the electric or galvanic current."

What saved Tilghman's claim from invalidity? The Court plainly explains: "It [Tilghman's process] is clearly pointed out in the specification, and one particular mode of applying it and carrying it into effect is described in detail. . . . The true construction of this claim is to be sought by comparing it, as have already done, with the context of the specification; with the statement of the patentee." *Tilghman*, 102 U.S. at 729. Indeed, the Court quotes Tilghman's specification at considerable length to demonstrate the completeness of the disclosure. *See*, *id.* at 718-21.

In short, Morse's claim was not abstract, but overly broad – and invalid because he did not provide an enabling description commensurate with the breadth of the claim. Tilghman's equally broad claim was acceptable because he provided a specific description of the apparatus and mode of operation for his invention.

Finally, the problem in *Corning* was that that the claim was indefinite – not that it was abstract or for a natural principle: "It is true that the patentee, after describing his machine, has set forth his claim in rather ambiguous and equivocal terms which might be construed to mean either a process or machine." *Corning*, 56 U.S. at 269. The Court held that the trial court erred in instructing the jury that the claim was for a process. *Id.* at 270.

In sum, while many of this Court's early decisions discuss the problem of process claims, a careful reading of the cases suggests that they did not actually hold any process claim unpatentable for being directed to an abstract intellectual idea.

E. The Modern Cases: *Benson, Flook, Diehr* and the Preemption Doctrine

This Court's modern § 101 jurisprudence applies its earlier precedent to the modern computer age and the patentability of computer-related inventions. The cases evidence a similar concern with respect to overly broad claims, rather than claims to mere abstract ideas.

Benson was this Court's first assessment of patentable subject matter as applied to software and digital computers. It is also the first case to raise the issue of whether a claim would "pre-empt" all uses of a mathematical formula: "The mathematical formula involved here has no substantial practical application except in connection with a digital computer, which means that if the judgment below is affirmed, the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself." 409 U.S. at 71-72.

As this sentence makes absolutely clear, "preemption" is a conclusion, it is not an analysis itself. The preemption concern arose from the very specific problem before that Court, that "a scientific truth, or the mathematical expression of it, is not a patentable invention." *Id.* at 67 (citing *MacKay Radio & Telegraph Co. v. Radio Corp. of Am.*, 306 U.S. 86, 94 (1939)). For the purposes of its analysis, the *Benson* Court appears to have adopted Webster's very narrow definition of an algorithm: "A procedure for solving a given type of mathematical problem is known as an 'algorithm.'" 409 U.S. at 65. The Court correctly appreciated that claim 13, which recited purely mathematical steps, was in essence the "mathematical expression" of a "scientific truth," since the rules governing the conversion of BCD into binary are determined purely by number theory, not by human ingenuity. The Court's analysis thus equated Benson's particular "mathematical algorithm" with a "mathematical expression" of a scientific truth: "In *Benson*, . . . we concluded that such an algorithm, or mathematical formula, is like a law of nature, which cannot be the subject of a patent." *Diehr*, 450 U.S. at 186.

While that conclusion was appropriate given Benson's claim, its premise is not true as a general rule. Not all mathematical algorithms are "scientific truths" like the relationship between BCD and binary. Mathematical algorithms (or formulas) for routing of cell phone calls, scheduling airplanes or elevators, or ranking Internet search results are not "scientific truths."

The *Flook* decision also assumed, that like the algorithm for BCD to binary conversion, all mathematical algorithms expressed "scientific truths," and as such they are "one of the basic tools of scientific and technological work," *Parker v. Flook,* 437 U.S. 584, 591 (1987) (citing *Benson* 409 U.S. at 67) (internal quotation marks omitted). This then explains the basis of *Flook's* rule that the algorithm must be "treated as though it were a familiar part of the prior art." That rule is necessary only if all mathematical algorithms in fact express scientific truths, i.e., something that was "true" before it was discovered, and thus part of the prior art. In his dissent in *Diehr*, Justice Stevens explained that the *Flook* Court's reasons for finding Flook's claim unpatentable were very basic: "The essence of the claimed discovery . . . was an algorithm that could be programmed on a digital computer." *Diehr*, 450 U.S. at 209 (Stevens, J., dissenting). Justice Stevens makes clear that using a digital computer to solve a problem is not the stuff of patentability, urging the majority to adopt "an unequivocal holding that no program-related invention is a patentable process under § 101 unless it makes a contribution to the art that is not dependent entirely on the utilization of a computer." *Id.* at 219. This view makes sense only on the assumption that mathematical algorithms implemented by computers always express scientific truths, an assumption that is not correct.

Flook's analysis need not be discarded however, because the decision is consistent with the fundamental concerns of *O'Reilly:* a failure of enablement and thus of the constitutional bargain. As in *O'Reilly*, Flook claimed more broadly than he enabled:

> The patent application does not purport to explain how to select the appropriate margin of safety, the weighting factor, or any of the other variables. Nor does it purport to contain any disclosure relating to the chemical processes at work, the monitoring of process variables, or the means of setting off an alarm or adjusting an alarm system.

> All that it provides is a formula for computing an updated alarm limit.

Flook, 437 U.S. at 586.

The *Diehr* Court made this very same point:

> We were careful to note in Flook that the patent application did not purport to explain how the variables used in the formula were to be selected, nor did the application contain any disclosure relating to chemical processes at work or the means of setting off an alarm or adjusting the alarm limit. All the application provided was a "formula for computing an updated alarm limit."

Diehr, 450 U.S. at 193 n.14.

Thus *Flook*, too, lends support to a conclusion that software patent claims are not inherently abstract, but must be evaluated for their breadth in light of the disclosure.

Diehr also follows the preemption approach, but rather than dissecting the claim as in *Flook*, that Court considered the claim as a whole: "they do not seek to preempt the use of that equation. Rather, they seek only to foreclose from others the use of that equation in conjunction with all of the other steps in their claimed process" *Diehr,* 450 U.S. at 187. *Diehr* is consistent with the mode of analysis presented here, that the claim must be interpreted as a whole and with regard to what those of skill in the art would understand based upon the inventor's disclosure. Preemption is not itself an analysis of the claim, but a conclusion to be drawn only after the claim is understood as a whole in view of the disclosure and knowledge of one of skill in the art.

F. A Multi-Factor Analysis for Section 101 and Software Process Claims

This Court has recognized in the obviousness context of § 103 that a "one-test-fits-all" approach to patentability is not appropriate. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007); *Graham v. Deere*, 383 U.S. 1 (1966). It stands to reason that a similarly flexible test would be appropriate when considering whether a claim is directed to excluded subject matter, given the diversity of technologies to which a claim may be related, and the differences in the types of exclusions under § 101.

A multi-factor approach to § 101 employs no one test to judge the patent eligibility of a process claim. Instead, the claim is evaluated by multiple balancing considerations, some of which may include:

- coverage of merely intellectual concepts versus coverage of concrete concepts and abstractions;
- preemption of applications of the claimed invention versus the available arena in which others can invent in the future;
- the breadth of the claim versus the definiteness and enablement provided by the specification;

- coverage of laws of nature versus coverage of applications of such laws for useful purposes; and
- coverage of natural phenomena per se versus the use of natural phenomena for particular ends.

As applied to software claims, these factors would likely lead to a conclusion that most are within the dominion of § 101. While a software process may have no practical application "except in connection with a digital computer," *Benson*, 409 U.S. 71, a modern analysis cannot stop there. Rather, the patent eligibility of a software process claim should be considered in view of the above factors.

First, even in the absence of explicit recitations of hardware, a software process claim describes the operations of a computer, as would be understood by anyone of skill in the art of computer engineering and programming. A computer cannot operate on "ideas," let alone "abstract" ones. The first balancing factor tilts heavily towards the conclusion that a process claim necessarily deals with concrete concepts and acceptable "abstractions."

Second, in the context of both the historical and modern cases, the concern over preemption as a *standalone* consideration is misplaced – rather preemption is a balancing factor. By definition a patent claim operates to "preempt" others from implementing a particular invention, for how else is the "exclusive right" obtained? It is not preemption per se that is bad, but rather preemption that is unsupported by an equally broad and enabling disclosure of invention that makes clear the metes and bounds of the invention, and thereby improperly forecloses future innovations by others. On the other hand, a broad scope of preemption is justified by a clear and definite claim and broadly enabling patent disclosure. Thus, the horse of preemption must always be shackled to the cart of disclosure.

So long as a claim for a software process is described as operating on a computer, then a claim, even a broad one, is patent eligible. If someone invents a particular algorithm, and a process claim for that algorithm is limited to operation on a computer – either explicitly or implicitly – then the sheer breadth of the claim does not defeat patent eligibility. The breadth of the claim must be understood not in a vacuum, but rather entirely in the context of what one of skill in the art would understand *precisely* because it is one of skill in the art who must be enabled by the patent disclosure.

Once the difference between laws of nature, natural phenomenon, and abstract intellectual ideas is recognized, claims implicating the former two categories can be more precisely identified. Separate tests and considerations appropriate to these claims remain to be identified.

Finally, only if the claim is so broad as to cover every possible implementation – and this is a question of fact that requires more than cursory analysis – then the claim likely would be unpatentable under § 102 or § 103 – but it would still be patentable subject matter under § 101. This is because such a claim would likely recite the desired result and without significant limitation as to the way of achieving that result. If the result is too broadly stated, then it is likely a result that has been obtained by others, and hence not novel.

◆

CONCLUSION

Applying a variety of balancing factors, rather than a single, complicated test, provides the flexibility necessary to leave room for the unknown future of technology innovation, a future that begins with the first patent application filed tomorrow.

Respectfully submitted,

ROBERT R. SACHS
Pro Se
DANIEL R. BROWNSTONE
Pro Se
555 California Street
Suite 1200
San Francisco, CA 94104
(415) 875-2300

Amici Curiae

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In The
Supreme Court of the United States

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BERNARD L. BILSKI and RAND A. WARSAW,

Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,

Respondent.

◆

On Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

◆

BRIEF OF *AMICUS CURIAE* SAN DIEGO INTELLECTUAL PROPERTY LAW ASSOCIATION IN SUPPORT OF NEITHER PARTY ON THE MERITS

◆

WILLIAM L. RESPESS
10398 Pacific Center Ct.
San Diego, CA 92121
(858) 410-4600

DOUGLAS E. OLSON
MARK J. MARCELLI
101 West Broadway, Suite 900
San Diego, CA 92101
(619) 744-2200

ROBERT C. LAURENSON
Counsel of Record
4 Park Plaza, Suite 1000
Irvine, CA 92614
(949) 759-5269

Attorneys for Amicus Curiae
San Diego Intellectual Property Law Association
Jessica S. Mitchell, President

TC+TR
005 4HIVCR

COCKLE LAW BRIEF PRINTING CO. (800) 225-6964
OR CALL COLLECT (402) 342-2831

QUESTIONS PRESENTED

Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

Whether the Federal Circuit's "machine-or-transformation" test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273.

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STATEMENT OF INTEREST OF *AMICUS CURIAE*[1]

The San Diego Intellectual Property Law Association (SDIPLA) is a non-profit association whose members have significant ties to San Diego's world-class research institutions, and leading wireless, biotechnology, and solar industries. Patent protection for innovative technologies has driven capital investment in San Diego and the commercialization of vital technologies. The primary goal of the SDIPLA in serving the San Diego community is providing continuing legal education services. Comprising about 500 registered members, the SDIPLA has grown to become one of the largest regional intellectual property bar organizations in the country.

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SUMMARY OF ARGUMENT

At issue in this case is the threshold for patent eligibility of a "process" under 35 U.S.C. § 101. Although Bilski's patent claims relate to "business methods," the standard applied to determine patent eligibility will directly impact the ability to patent, develop and commercialize other technologies.

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[1] This brief was prepared by members of the SDIPLA Amicus Committee on a *pro bono* basis. Counsel for a party did not author this brief in whole or in part. Nor did counsel for a party make a monetary contribution intended to fund the preparation or submission of the brief.

All counsel of record were timely notified of SDIPLA's intention to file this brief, and written consent on behalf of all parties was granted.

By adopting the "machine-or-transformation" test for rigid application to all cases involving all technologies, the Federal Circuit overrode Congressional intent, misread this Court's precedent, and foreclosed patent eligibility for processes whose patent protection promotes the sciences and useful arts, by applying fundamental principles in useful ways. The SDIPLA has an interest in ensuring that the test for patent eligibility remains a flexible threshold to patentability that will continue to promote innovation.

Although this Court has looked to whether a claimed process uses a "machine" or transforms subject matter as a clue for patent eligibility, this Court has never adopted or suggested that the "machine-or-transformation" test is the sole test for eligibility. While it remains an affirmative indicator of patent eligibility, the outer boundary for patent eligibility excludes only fundamental principles, and claims that preempt all uses of such principles.

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ARGUMENT

I. THE LEGISLATIVE HISTORY AND THIS COURT'S PRECEDENTS SUPPORT A FLEXIBLE TEST FOR PATENT ELIGIBILITY THAT CONSIDERS ALTERNATIVE DEFINITIONS OF "PROCESS"

The legislative history of 35 U.S.C. § 101 and this Court's interpretation of § 101 and its antecedents reveal that Congress and this Court intended that patent eligibility be governed by a flexible test, pursuant to which a process is patent eligible if it transforms subject matter or uses a machine, and is patent ineligible only if it covers the exclusive use of a fundamental principle (natural phenomenon, law of nature, or abstract idea).

The starting point for discerning the proper test for patent eligibility of a "process" is the Court's pre-1952 precedents interpreting eligible processes under the predecessor Patent Act of 1793, because those decisions inform what Congress intended when it added "process" to the categories of patent eligible subject matter under § 101 of the Patent Act of 1952.

A. This Court's Pre-1952 Precedents

This Court has long recognized that patent policy excludes only "fundamental truths" from patent eligibility:

> A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in

> either of them an exclusive right. Nor can an exclusive right exist to a new power, should one be discovered in addition to those already known.
>
> * * *
>
> This, by creating monopolies, would discourage arts and manufactures, against the avowed policy of the patent laws.

Le Roy v. Tatham, 55 U.S. 156, 175 (1852); *see* U.S. Constitution, Art. I. § 8, cl. 8; *see also Parker v. Flook*, 437 U.S. 584, 589-96 (1978) ("The rule that the discovery of a law of nature cannot be patented rests, not on the notion that natural phenomena are not processes, but rather on the more fundamental understanding that they are not the kind of 'discoveries' that the statute was enacted to protect.").

Later precedents reveal that this Court did not intend to apply a single, rigid test in all circumstances and to all technologies. Rather, the Court has used a flexible approach to determine whether a claimed "process" is patent eligible, depending on the circumstances and the technology involved.

Thus, in cases addressing eligibility of processes involving the physical manipulation of tangible subject matter without specifying the means used, the Court held the processes were patent eligible where they transformed or reduced subject matter to a different state or thing. *E.g.*, *Cochrane v. Deener*, 94 U.S. 780, 788 (1877); *New Process Fermentation Co. v. Maus*, 122 U.S. 413, 428 (1887).

In the seminal case of *Cochrane v. Deener*, for example, the Court determined that the claimed method for manufacturing flour was a patent-eligible "process" because it met the following test for transforming subject matter:

> That a process may be patentable, irrespective of the particular form of the instrumentalities used, cannot be disputed. . . . A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing.

Cochrane, 94 U.S. 780, 788 (1877).

Similarly, in *New Process Fermentation Co. v. Maus*, the Court determined that the claimed "process" for fermenting beer was patent-eligible, by applying the transformation test articulated in *Cochrane*:

> This is, as was said in *Cochrane v. Deener*, "a mode of treatment of certain materials to produce a given result," and "an act, or a series of acts, performed upon the subject matter to be transformed and reduced to a different state or thing," and "requires that certain things should be done with certain substances, and in a certain order." It is, therefore, a process or art.

New Process Fermentation, 122 U.S. 413, 428 (1887).

However, for patent claims reciting a process utilizing a fundamental principle, such as the natural force of electromagnetism, the Court looked to whether the claim achieved a useful result and avoided preemption of the fundamental principle. *E.g.*, *O'Reilly v. Morse*, 56 U.S. 62, 112-20 (1854); *The Telephone Cases*, 126 U.S. 1, 531-35 (1888); *Tilghman v. Proctor*, 102 U.S. 707, 724-30 (1881).

In *O'Reilly v. Morse*, the Court analyzed Morse's eighth claim to "the use of . . . electromagnetism . . . for marking or printing intelligible characters, signs, or letters, at any distances" which expressly disclaimed a limitation "to the specific machinery" described in the specification. *Morse*, 56 U.S. at 112. In its determination of patent eligibility, the Court focused on whether the claim preempted the principle of using electromagnetism as a motive force to achieve the desired effect, concluded that the claim did cover all uses for that purpose, and accordingly denied patent eligibility. *Id.* at 112-13.

Further, in *The Telephone Cases*, involving Alexander Graham Bell's fifth claim to the "method of, and apparatus for, transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations, similar in form to the vibrations of the air accompanying the said vocal or other sounds, substantially as set forth," this Court focused on whether the claim preempted the principle of using electromagnetic energy to convey speech over long distances, concluding that it did not and was therefore patent eligible. *The Telephone Cases*, 126 U.S. at 531. Unlike Morse's eighth claim, Bell's fifth claim was not a claim "for the use of a current of electricity in its natural state" but "for putting a continuous current, in a closed circuit, into a certain specified condition suited to the transmission of vocal and other sounds" to accomplish the transmission of speech, which was the application of the principle to achieve a useful result. *Id.* at 531-35.

In *Tilghman v. Proctor*, a case involving a process for breaking down fats, the Court again focused on "the true distinction between a mere principle, as the subject of a patent, and a process by which a principle is applied to effect a useful result," and whether the claim preempted the use of a chemical principle. 102 U.S. 707, 724 & 726-28 (1881). This indicates that application of the test for whether a claim preempts a fundamental principle is not limited to use with intangible technologies.

Moreover, in analyzing the patent eligibility of a process for reacting fats with water at high temperature and pressure to break them down into their constituent components (fatty acids and glycerin), the *Tilghman* Court analyzed the method's use of the known chemical principle that a "fatty body" could react with water to yield its constituent components, concluding that the claimed process used a particular mode of carrying out this reaction to achieve a useful result, and was therefore patent eligible. *Id.*

Thus, as in *Morse*, the Court analyzed patent eligibility by looking at the way in which the claimed method utilized a fundamental principle to effect a useful result, holding that a process that preempted a fundamental principle, even for a particular purpose, was not patent eligible.

Accordingly, these cases flexibly apply alternative definitions of "process," depending on the circumstances and the technology involved. For example, in *Cochrane* and *New Process Fermentation*, which involved physical transformation of tangible subject matter, the Court applied the transformation test, while in *Morse* and *The Telephone Cases*, which involved the use of fundamental, natural forces, and in *Tilghman*, which involved the use of chemical principles, the Court applied the preemption test.

Conversely, this Court has never *denied* patent eligibility to a process that failed to satisfy the transformation test,[2] and it vigilantly struck down efforts to impose rigid bars to patent eligibility under the Patent Act of 1793. *See Expanded Metal Co. v. Bradford*, 214 U.S. 366, 385-86 (1909) (quelling any suggestion that a patent eligible process must achieve a useful result through chemical or other similar elemental action alone, with mechanical action excluded).

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[2] However, several pre-1952 decisions by lower courts did deny patent eligibility based on failure to meet the transformation test. *E.g., Greenwalt v. Stanley Co.*, 54 F.2d 195 (3d Cir. 1931); *Myers v. Coe*, 83 F.2d 708 (D.C. Cir. 1936); *Halliburton Oil Well Cementing Co. v. Walker*, 146 F.2d 817 (9th Cir. 1944); *In re Yuan*, 188 F.2d 377 (C.C.P.A. 1951).

It is only when a process satisfies neither definition, *i.e.*, does not use a machine nor achieve a transformation *and* covers the exclusive use of a fundamental principle, as was the case with the eighth claim in *Morse*, that the Court has found the process ineligible for patenting. 56 U.S. at 112-20.

Accordingly, under this flexible approach, a process is patent eligible if it satisfies either definition independently applied, and is only patent ineligible if it preempts a fundamental principle. Thus, although the "machine-or-transformation" test can be used to screen for patent eligibility, in contrast to the Federal Circuit's holding, a process failing that definition is not necessarily patent ineligible. Instead, a process claim can only stumble at the threshold of patentability if it preempts the use of a fundamental principle.

B. The Legislative History

Congress did not intend to disturb the Court's flexible test for patent eligibility in 1952 when it enacted 35 U.S.C. § 101.

Before 1952, a process historically enjoyed patent protection as a form of "art," the term used in the pre-1952 statutes. *See Corning v. Burden*, 56 U.S. 252, 267-68 (1854). In 1952, when Congress enacted 35 U.S.C. § 101, it substituted "process" for "art" as a category of patentable subject matter because it had a more "readily grasped" meaning than "art" as interpreted by the courts. *See* H.R. Rep. No. 1923, 82d Cong., 2d Sess., 17 (1952) ("'Process' has been used as its meaning is more readily grasped than 'art' as interpreted. . . ."); S. Rep. No. 1979, 82d Cong., 2d Sess., 17 (1952) (same).

Thus, Congress intended to codify the prior judicial interpretations of "process," including the flexible test for patent eligibility of a "process" that had evolved in this Court's pre-1952 precedents. At that time, Congress also enacted 35 U.S.C. § 100(b), defining a "process" to mean "process, art, or method." Through this action as well, Congress intended to codify the prior judicial interpretations of "process," including the flexible test for patent eligibility of a "process" that had evolved in this Court's pre-1952 precedents. *See* H.R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952); S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952).

C. This Court's Post-1952 Precedents

This Court, in analyzing patent eligibility under § 101 in its post-1952 decisions, further endorsed the flexible test of its pre-1952 precedents. In *Gottschalk v. Benson* and *Parker v. Flook*, when faced with new technology involving manipulation of intangible data by computer software, the Court again looked to whether the process preempted a fundamental principle. *See Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972); *Parker v. Flook*, 437 U.S. 584, 589-96 (1978).

Thus, in *Benson*, the Court applied the "preemption" test in determining that a claim to a process for programming a computer by converting signals from binary-coded decimal form into pure binary form was patent ineligible because the claimed algorithm had no practical application except in combination with a computer. *Benson*, 409 U.S. at 71-72. The Court noted that "if the judgment below is affirmed, the patent would preempt the mathematical formula and, in practical effect, would be a patent on the algorithm itself." *Id.* at 72.

In *Flook*, the Court again looked at the preemption test in holding ineligible a claim containing an algorithm for setting alarm limits in a process comprising the catalytic chemical conversion of hydrocarbons. The Court determined that although the claim's recitation of the hydrocarbon field of use limitation meant that the claim did not preempt uses of the algorithm outside the field, the recitation of the field of use and "conventional or obvious" "post-solution" activity could not render the claim patent eligible. *See Flook*, 437 U.S. at 589-96.[3]

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[3] Although *Flook*'s analysis raises the question of whether "preemption" is the appropriate terminology to use in referring to the test for whether a claim covers the exclusive use of a fundamental principle, it appears that the result in *Flook* is consistent with the underlying policy that § 101 precludes patent eligibility for a claim that would convey exclusive rights

(Continued on following page)

As noted in *Diamond v. Diehr*, when a claim recites a fundamental principle such as "a mathematical formula (or scientific principle or phenomenon of nature), an inquiry *must* be made into whether the claim is seeking patent protection for that formula in the abstract." *Diamond v. Diehr*, 450 U.S. 175, 191 (1981) (emphasis added).

However, in *Diehr*, when faced with a technology involving physical curing of rubber as well as use of a fundamental mathematical algorithm for calculating alarm limits, the Court first applied the transformation definition of "process," and then, to address any concerns the claims preempted a fundamental principle in the form of a mathematical algorithm, it applied the preemption oriented definition of "process." *See Diehr*, 450 U.S. at 184-93.

When viewed in context, statements in *Diehr* and *Benson*, which characterize transformation or reduction of an article[4] as the "clue" to patentability, *Diehr*, 450 U.S. at 184; *Benson*, 409 U.S. at 70, merely express that aspect of the flexible test whereby the

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to a fundamental principle. *See Le Roy v. Tatham*, 55 U.S. at 175 ("A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right.").

[4] We understand that the Court, in substituting "article" for "subject matter" in the original definition from *Cochrane*, did not intend a substantive change. However, to remove any confusion on this issue, the Court should change "article" back to "subject matter" in the transformation centered test for patent eligibility, for the reasons discussed in § II, *infra*.

transformation test can be used to affirm patent eligibility, but a process that fails to satisfy that test is not necessarily patent ineligible. Therefore, the Federal Circuit erred in interpreting these statements as supporting the adoption of the "machine-or-transformation" test as the sole standard for patent eligibility as an approximation of a preemption test. *See In re Bilski,* 545 F.3d 943, 954 (Fed. Cir. 2008) (*en banc*).

In fact, these decisions confirm that this Court has eschewed adopting a "machine-or-transformation" test for determining the threshold for patent eligibility under § 101. For example, in *Benson*, the Court stated:

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a "different state or thing." *We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.*

Benson, 409 U.S. at 71 (emphasis added).

Then, in *Flook*, the Court stated:

> An argument can be made, however, that this Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a "different state or thing." . . . As in *Benson*, *we assume that a valid process patent may issue even if*

> *it does not meet one of these qualifications of our earlier precedents.*

Flook, 437 U.S. at 589 n.9 (emphasis added).

On the other hand, even though the Court endorsed application of the flexible test, its post-1952 cases have clarified the test in two significant respects.

First, the preemption test for "process" was clarified with respect to the relevance of the purpose of the claimed process. In its pre-1952 decision in *The Telephone Cases*, this Court held that a claim reciting a new apparatus was patentable regardless of whether the claim covered all practical uses of a principle for a particular purpose:

> It may be that electricity cannot be used at all for the transmission of speech except in the way Bell has discovered, and that therefore, *practically*, his patent *gives him its exclusive use for that purpose*, but that does not make his claim one for the use of electricity distinct from the particular process with which it is connected in his patent. It will, if true, show more clearly the great importance of his discovery, *but it will not invalidate his patent.*

126 U.S. 1, 535 (emphasis added).

In contrast, in *Tilghman*, the Court characterized the eighth claim held patent ineligible in *Morse*, as "a claim to the exclusive use of one of the powers of nature for a particular purpose." *Tilghman*, 102 U.S. at 726.

However, in *Benson*, the Court focused on the practical effect of patent coverage for the claimed process, and found it patent ineligible because it covered all uses of a principle for its intended use in connection with a digital computer:

> It is conceded that one may not patent an idea. But in *practical* effect that would be the result if the formula for converting BCD numerals to pure binary numerals were patented in this case. The mathematical formula involved here has no substantial *practical* application except in connection with a digital computer, which means that if the judgment below is affirmed, the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself.

Benson, 409 U.S. 63, 71-72 (emphasis added).

Thus, *Benson* clarified that preemption of all uses of a principle *for a particular purpose* rendered a process patent ineligible, consistent with the Court's prior holding in *Morse*, but in contrast to the approach taken in *The Telephone Cases*.

Second, in *Flook*, the Court applied a mode of analysis that treats the fundamental principle as prior art, regardless of whether it was known or not at the time of the claimed invention, and then ignores any "obvious or conventional" post-solution limitations in the claim in determining whether the claim is patent eligible:

> Whether the algorithm was in fact known or unknown at the time of the claimed invention, as one of the “basic tools of scientific and technological work,” (citation), it is treated as though it were a familiar part of the prior art.[5]
>
> * * *
>
> We think this case must also be considered as if the principle or mathematical formula were well known.
>
> * * *
>
> Here it is absolutely clear that respondent’s application contains no claim of patentable invention. The chemical processes involved in catalytic conversion of hydrocarbons are well known, as are the practice of monitoring the chemical process variables, the use of alarm limits to trigger alarms, the notion that alarm limit values must be recomputed and readjusted, and the use of computers for “automatic monitoring-alarming.”

Flook, 437 U.S. at 591-92, 594.

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[6] Analogously, “inherent” properties cannot constitute the novel distinction between a claimed invention and the prior art. *Schering Corp. v. Geneva Pharms., Inc.*, 339 F.3d 1373, 1379 (Fed. Cir. 2003) (rejecting the contention that inherent anticipation requires recognition in the prior art).

The Court considered this mode of analysis to have its genesis in its landmark *O'Reilly v. Morse* decision, specifically in the latter Court's adoption of the reasoning from a famous English decision, *Neilson v. Harford*, Web. Pat. Cases 295, 371 (1844). *Flook*, 437 U.S. at 592. The Court rejected any hint that this mode of analysis improperly injected considerations of novelty and obviousness into the test for patent eligibility, or failed to consider the claim as a whole. *Flook*, 437 U.S. at 592-94; *see Diehr*, 450 U.S. at n.12.

To summarize, the Court's post-1952 precedents endorse and reaffirm the flexible test under which a process is patent eligible if it satisfies either definition independently applied, and is only patent ineligible if it preempts a fundamental principle. Thus, although the transformation test can be used to screen for patent eligibility, a process failing that definition is not necessarily patent ineligible, in contrast to the Federal Circuit's holding. Instead, a process claim can only fail to reach the threshold of patentability if it preempts the use of a fundamental principle, whether or not for a particular purpose.

II. THE FEDERAL CIRCUIT MAJORITY ERRED BY ADOPTING THE "MACHINE-OR-TRANSFORMATION" TEST AS THE DEFINITIVE TEST

The Federal Circuit majority adopted a "definitive" (*i.e.*, exclusive) test for patent eligibility under which "[a] claimed process is surely patent-eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing," and is patent-ineligible if it does not. *Bilski*, 545 F.3d at 954.

By adopting a rigid text that always applies the same "machine-or-transformation" test for all cases and for all technologies as the sole proxy for a preemption test, the Federal Circuit overrode Congressional intent, misread this Court's precedent, and foreclosed patent eligibility for processes which do not preempt or exclude the use of a fundamental principle.

The Federal Circuit majority also ignored the limitation of this test in *Diehr*, requiring that a court *must* apply the preemption centered definition when the claim recites a fundamental principle such as mathematical algorithm (or scientific principle or natural phenomenon).[6]

Without basis, the Federal Circuit majority concludes that this Court considers the "machine-or-transformation" test to be the definitive test. *Bilski*, 545 F.3d at 954 ("The Supreme Court, however, has enunciated a definitive test to determine whether a process claim is tailored narrowly enough to encompass only a particular application of a fundamental principle rather than to pre-empt the principle itself.")

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[6] *Diehr*, 450 U.S. at 191 ("We recognize, of course, that when a claim recites a mathematical formula (or scientific principle or phenomenon of nature), an inquiry *must* be made into whether the claim is seeking patent protection for that formula in the abstract.") (emphasis added).

However, to the contrary, as shown in § I(A), *supra*, this Court's pre-1952 precedents adopt a flexible test for analyzing patent eligibility, pursuant to which the machine-transformation definition of "process" is only one of two possible definitions, and this Court's post-1952 precedents embrace and build upon this flexible test, as explained in § I(C), *supra*.

To support its conclusion, the Federal Circuit majority also claims that a preemption test is too difficult to apply with respect to nascent, incorporeal 21st century technologies that purportedly cannot easily be analogized with the technologies involved in *Diehr* and *Benson*:

> The question before us then is whether Applicants' claim recites a fundamental principle and, if so, whether it would pre-empt substantially all uses of that fundamental principle if allowed. Unfortunately, this inquiry is hardly straightforward. How does one determine whether a given claim would pre-empt all uses of a fundamental principle? Analogizing to the facts of *Diehr* or *Benson* is of limited usefulness because the more challenging process claims of the twenty-first century are seldom so clearly

> limited in scope as the highly specific, plainly corporeal industrial manufacturing process of *Diehr*; nor are they typically as broadly claimed or purely abstract and mathematical as the algorithm of *Benson*.

Bilski, 545 F.3d at 954.

However, in *Morse* and *The Telephone Cases*, this Court had no problem applying a preemption test to the then-nascent technologies involving intangible manipulation of electromagnetic energy at issue in those cases, which perhaps are more analogous to the incorporeal 21st century technologies the Federal Circuit majority has in mind. Therefore, based on the guidance provided in these cases, it should not be unduly difficult to apply a preemption centered test to 21st century technologies involving intangible, incorporeal manipulation of data and signals.

Certainly, with respect to Bilski's commodity hedging claims, it should not be overly challenging to apply a preemption test. As a threshold matter, if methods of doing business are considered to be patent eligible, then we see no reason why fundamental business principles should not be added to the categories of excluded subject matter that are included in the umbrella term "fundamental principle." Assuming that the use of forward or futures contracts to hedge against the risk of commodity price movements in other (*e.g.*, spot or cash) markets for the same commodity qualifies as a fundamental principle, given its prevalence and the length of time it has been practiced,[7] then it should be relatively easy to apply to the Bilski claims the preemption centered analysis in *Flook*, whereby one looks to see if any extra-solution limitations in the claim are conventional or obvious in view of the fundamental principle treated as prior art.

Thus, it can be seen that the Federal Circuit majority grievously erred. Moreover, the error is material because it effectively forecloses patent eligibility for the sizable group of processes that fail to satisfy the Federal Circuit majority's "machine-or-transformation" test, and yet satisfy the preemption test for "process," *i.e.*, the class of processes that are neither tied to a machine nor transform or reduce subject matter to a different state or thing, but yet achieve a useful result or effect and avoid preempting a fundamental principle.

However, correcting the error does not require a wholesale rejection of the Federal Circuit majority's

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[7] According to a 1998 edition of a Chicago Board of Trade Trading Manual, the use of forward contracts to hedge against commodity price movements in spot markets for the same commodity has been practiced since the 13th century in Europe, the 18th century in Japan, and the 19th century in the United States. *See* Chicago Board of Trade Commodity Trading Manual, Peter J. Catania, *et al.* (1998 ed.), pages 2-3, 5. In the United States, the use of futures contracts (a standardized form of a forward contract) as a hedging tool has been practiced since 1848, when the Chicago Board of Trade was formed. *Id.* at page 5.

"machine-or-transformation" test. Rather, it only requires recognizing that this test is no longer the exclusive or definitive test for patent eligibility, but instead becomes, subject to the qualification in *Diehr*, an affirmative test for patent eligibility, pursuant to which a process, if it satisfies this test, is patent eligible, but, if it fails the test, is not necessarily patent ineligible, within an overall test or standard for patent eligibility that is based on a preemption analysis.

In addition to this, we respectfully submit that two other changes should be made to the Federal Circuit majority's test.

First, the term "article" in the transformation prong of the test should be changed to "subject matter" to conform with the original enunciation of the transformation centered definition set forth in *Cochrane*[6], reproduced below:

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[6] Although the term "article" was inexplicably substituted for "subject matter" in this Court's restatement of the *Cochrane* definition in *Benson*, reproduced below, that no substantive change was intended is demonstrated by the fact that this restatement of the definition appears immediately after a quotation of the *Cochrane* definition from which it originated:

> Transformation and reduction of an *article* "to a different state or thing" is the clue to the patentability of a process claim that does not include particular machines.

Benson, 409 U.S. at 70 (emphasis added).

> A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the *subject-matter* to be transformed and reduced to a different state or thing.

94 U.S. 780, 788 (1877) (emphasis added).

We believe that such a change is necessary to avoid any confusion by lower courts and the patent community regarding whether certain transformations of intangible subject matter are included in the definition, and to conform the test so that it is better suited to the incorporeal 21st century technologies that most concerned the Federal Circuit majority.

For example, based on its precedents, the Federal Circuit majority held that certain transformations of intangible subject matter (data, signals), *i.e.*, those representative of or constituting physical activity or objects, are patent eligible transformations:

> The raw materials of many information-age processes, however, are electronic signals and electronically-manipulated data.
>
> * * *
>
> Which, if any, of these processes qualify as a transformation or reduction of an article into a different state or thing constituting patent-eligible subject matter?
>
> Our case law has taken a measured approach to this question, and we see no reason here to expand the boundaries of

what constitutes patent-eligible transformations of articles.

Our predecessor court's mixed result in Abele illustrates this point. There, we held unpatentable a broad independent claim reciting a process of graphically displaying variances of data from average values. That claim did not specify any particular type or nature of data; nor did it specify how or from where the data was obtained or what the data represented. (citations). In contrast, we held one of Abele's dependent claims to be drawn to patent-eligible subject matter where it specified that "said data is X-ray attenuation data produced in a two dimensional field by a computed tomography scanner." This data clearly represented physical and tangible objects, namely the structure of bones, organs, and other body tissues. Thus, the transformation of that raw data into a particular visual depiction of a physical object on a display was sufficient to render that more narrowly-claimed process patent-eligible.

We further note for clarity that the electronic transformation of the data itself into a visual depiction in Abele was sufficient; the claim was not required to involve any transformation of the underlying physical object that the data represented. We believe this is faithful to the concern the Supreme Court articulated as the basis for the machine-or-transformation test, namely the prevention of pre-emption of fundamental principles. So

> long as the claimed process is limited to a practical application of a fundamental principle to transform specific data, and the claim is limited to a visual depiction that represents specific physical objects or substances, there is no danger that the scope of the claim would wholly pre-empt all uses of the principle.

Bilski, 545 F.3d at 962-63 (citations omitted).

The same conclusion was reached in an earlier Federal Circuit decision, *In re Schrader*, based on the same and other precedents (*e.g.*, *The Telephone Cases*):

> The claims in *Arrhythmia* involved the manipulation of electrical signals and data representative of human cardiac activity; it was held that they recited patentable subject matter. For purposes of § 101, the claims were indistinguishable from the claims involving the manipulation of data representing CAT scan images held patentable in *In re Abele*, or the claims involving the manipulation of signals representative of reflected seismic energy held patentable in *In re Taner*.
>
> These claims all involved the transformation or conversion of subject matter representative of or constituting *physical activity or objects*. In *Arrhythmia*, it was electrocardiograph signals representative of human cardiac activity; in *Abele*, it was X-ray attenuation data representative of CAT scan

> images of physical objects; and in *Taner,* it was seismic reflection signals representative of discontinuities below the earth's surface.

In re Schrader, 22 F.3d 290, 294 (Fed. Cir. 1994) (citations omitted).

> In *The Telephone Cases,* the Court upheld the validity of a claim directed to a method for transmitting speech by impressing acoustic vibrations representative of speech onto electrical signals. If there was a requirement that a physical *object be* transformed or reduced, the claim would not have been patentable.
>
> * * *
>
> Thus, it is apparent that changes to *intangible* subject matter representative of or constituting physical activity or objects are included in the [*Cochrane*] definition.

Id. at 295 n.12 (citations omitted).

We believe the logic of these passages to be sound, and therefore, to eliminate any confusion regarding whether these transformations of intangible subject are patent eligible transformations, this Court should expressly substitute "subject matter" for "article" in the transformation centered definition of process.

Second, the "machine" prong of the "machine-or-transformation" test should be broadened to include the other two statutory classes ("manufacture" and "composition of matter") because utilization in a process of other products "made by man" provides equally compelling evidence of patent eligibility, whether the product is a machine, a manufacture or a composition of matter—there is no good reason to limit this prong of the test to "machines."

With these changes made to the Federal Circuit majority's "machine-or-transformation" test, and with this test incorporated into the flexible test as outlined above, the flexible test would appear as follows (with the changes made as a result of the incorporation of the Federal Circuit test emphasized for clarity):

1. A tribunal has the freedom to select between alternative definitions or tests for patent eligibility, one transformation centered, the other preemption oriented, depending on the circumstances and technology involved, except that when the claim recites a fundamental principle such as a mathematical algorithm (or scientific principle or natural phenomenon), the tribunal must apply the preemption centered definition.

2. Under the transformation centered definition, a process is patent eligible if *(1)* it transforms or reduces subject matter to a different state or thing, *where transformations or reductions of intangible subject matter (data, signals) representative of or constituting physical activity or objects are patent eligible transformations, or (2) is tied to a*

machine, manufacture, or composition of matter.

3. Under the preemption oriented definition, a process is patent eligible if it achieves a useful effect or result and avoids preempting a fundamental principle (natural phenomenon, law of nature, abstract idea), except that a claim reciting a fundamental principle impermissibly preempts that fundamental principle when it (1) covers all practical uses of that principle for a particular purpose, or (2) any extra-solution limitations of the claim are obvious over the fundamental principle treated as prior art.
4. A process that satisfies either definition of "process" independently applied is patent eligible. That is, a process is only patent ineligible if it satisfies neither definition of "process."

In practice, the preemption centered definition will be the definitive standard for patent eligibility, with the transformation centered definition being an affirmative test to screen for patent eligibility. Moreover, when the claim recites a fundamental principle, the preemption test must be applied, although the "machine-or-transformation" test may still provide an inference (or presumption) of patent eligibility.

III. ANSWERS TO THE QUESTIONS RAISED

Question No. 1: Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

Answer: Yes, the Federal Circuit erred for the reasons set forth in § II, *supra*.

Question No. 2: Whether the Federal Circuit's "machine-or-transformation" test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect "method[s] of doing or conducting business." 35 U.S.C. § 273.

Answer: SDIPLA takes no position on whether 35 U.S.C. § 273 represents a clear Congressional intent that patents protect methods of doing business or whether the Federal Circuit's test is inconsistent with such intent, if expressed in 35 U.S.C. § 273. SDIPLA's position is that the Federal Circuit majority's test is inconsistent with the legislative history of 35 U.S.C. § 101 set forth in § I(B), *supra*, showing that Congress, when it substituted "process" for "art" in the 1952 Patent Act, intended to codify the flexible test for patent eligibility of processes that had evolved in this Court's pre-1952 precedents.

IV. SDIPLA TAKES NO POSITION ON WHETHER THE BILSKI CLAIMS ARE PATENT ELIGIBLE UNDER THE FLEXIBLE TEST

SDIPLA takes no position on whether the Bilski claims are patent eligible under the flexible test, other than to note that, if the use of forward or futures contracts to hedge commodity price movements in other (*e.g.*, spot or cash) markets for the same commodity is sufficiently prevalent and long-standing to qualify as a fundamental principle, *see* n.7, *supra*, then the patent eligibility of the Bilski claims can be determined under the mode of analysis set forth in *Flook*, pursuant to which one assumes that the principle recited by a claim is prior art, and then determines whether the remaining extra-solution limitations recited in the claim are conventional or obvious in view of this assumed prior art.

◆

CONCLUSION

For all the foregoing reasons, the Federal Circuit's "machine-or-transformation" test for patent eligibility should be rejected, and replaced with the flexible test outlined in § II, *supra*.

Respectfully submitted,

ROBERT C. LAURENSON
Counsel of Record
4 Park Plaza, Suite 1000
Irvine, CA 92614
(949) 759-5269

WILLIAM L. RESPESS
10398 Pacific Center Ct.
San Diego, CA 92121
(858) 410-4600

DOUGLAS E. OLSON
MARK J. MARCELLI
101 West Broadway, Suite 900
San Diego, CA 92101
(619) 744-2240

Attorneys for Amicus Curiae
San Diego Intellectual
Property Law Association

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BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,
v.
DAVID J. KAPPOS, UNDER SECRETARY OF
COMMERCE FOR INTELLECTUAL PROPERTY AND
DIRECTOR, PATENT AND TRADEMARK OFFICE,
Respondent.

**On Writ of Certiorari to the
United States Court of Appeals
for the Federal Circuit**

BRIEF OF THE SOFTWARE FREEDOM LAW CENTER AS *AMICUS CURIAE* IN SUPPORT OF RESPONDENT

EBEN MOGLEN
Counsel of record
DANIEL RAVICHER
MICHAEL A. SPIEGEL
MISHI CHOUDHARY
AARON WILLIAMSON
Software Freedom Law Center
1995 Broadway, 17th Floor
New York, New York 10023
212-461-1900

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QUESTION PRESENTED

Was the Court of Appeals correct in holding that software standing alone is not patentable subject matter?

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INTEREST OF THE AMICUS CURIAE

Much of the world's most important and most commercially significant software is distributed under copyright licensing terms that give recipients freedom to copy, modify and redistribute the software ("free software").[1] One could not send or receive e-mail, surf the World Wide Web, perform a Google search or take advantage of many of the other benefits offered by the Internet without free software. Indeed, this brief was written entirely with free software word processors, namely OpenOffice, GNU Emacs and LaTeX, each of which are not just competitive with or superior to non-free software programs, but which also provide their users with the freedom to improve the program to fit their needs and reflect their desires.

The Software Freedom Law Center ("SFLC") is a not-for-profit legal services organization that provides legal representation and other law-related services to protect and advance free software. SFLC provides pro bono legal services to non-profit free software developers and also helps the general public better understand the legal aspects of free software. SFLC has an interest in this matter because the decision of this Court will have a significant effect on the rights of the free software developers and users SFLC represents. More specifically, SFLC has an interest in ensuring that limits are maintained on the reach of patent law so that Free and Open Source software development is not unreasonably and unnecessarily impeded.

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[1] Pursuant to Sup. Ct. R. 37.6, *amicus* notes that no counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than *amicus curiae* and its counsel made a monetary contribution to its preparation or submission. Petitioners and Respondents have consented to the filing of this brief through blanket consent letters filed with the Clerk's Office.

SUMMARY OF ARGUMENT

In *Microsoft v. AT&T*, this Court recognized that "[a]bstract software code [uninstalled in a machine] is an idea without physical embodiment." 550 U.S. 437, 449 (2007). The court below correctly decided that, on the basis of this Court's prior holdings, such abstract ideas without physical embodiment cannot be the subject of a statutory patent monopoly.

Software standing alone cannot be patentable subject matter under 35 U.S.C. § 101, because, as this Court has repeatedly recognized in an unbroken series of cases extending over more than 130 years, "An idea of itself is not patentable." *Rubber-Tip Pencil v. Howard*, 87 U.S. (20 Wall.) 498, 507 (1874). The court below correctly held, therefore, that the Patent Act should be interpreted so that computer software can contribute to the claims of a patent only to the extent that this software is combined with a special-purpose machine or is used in a "process" that transforms matter, like the rubber undergoing vulcanization in *Diamond v. Diehr*, 450 U.S. 175 (1981). The Federal Circuit's conclusion on this point is the only outcome consistent with the prior teachings of this Court. It also represents the outcome best calculated to produce maximum innovation in the production of computer software under contemporary technical conditions. Any other holding would not only breach the line previously established by the decisions of this Court between patentable art and processes on the one hand and abstract ideas or facts of nature on the other—in doing so it would also raise grave constitutional issues under the analysis set forth by this Court in *Eldred v. Ashcroft*, 537 U.S. 186 (2003).

I. Software Is Algorithms For Computers In Human Readable Terms, And Is Therefore Not Patentable, As This Court Has Repeatedly Held

The Court of Appeals for the Federal Circuit held below that the presence of a particular machine or apparatus or the transformation of a particular article into a different state or thing turns the abstract ideas expressed by a computer program code into a "process" within the meaning of the Act. This conclusion correctly follows from this Court's prior holdings.

This Court has repeatedly held that subject matter which would have the practical effect of preempting laws of nature, abstract ideas or mathematical algorithms is ineligible for patent protection. Further, in *Microsoft v. AT&T* you also stated that abstract software code is an idea without physical embodiment and is merely information—a detailed set of instructions. A computer program, no matter what its function, is nothing more or less than the representation of an algorithm. It is not conceptually different from a list of steps written down with pencil and paper for execution by a human being. In no uncertain terms, this Court in *Gottschalk v. Benson*, 409 U.S. 63 (1972), held that software, which contains and upon command executes algorithms that solve mathematical problems through the use of a computer, was not patentable under § 101.

Thus, software standing alone, without the presence of a special purpose machine or the act of transforming a particular article into a different state or thing is merely information, a representation of an algorithm or algorithms, and not a "process" within the meaning of this Act.

Confronted with the rise of new technologies, this Court has addressed the issue of patentable subject matter several times. *Benson*, 409 U.S. 63; *Parker v. Flook*, 437 U.S. 584 (1978); *Diamond v. Chakrabarty*, 447 U.S. 303 (1980); *Diamond v. Diehr*, 450 U.S. 175 (1981).

Since before the Civil War, this Court has consistently made it clear that subject matter which would have the practical effect of preempting laws of nature, abstract ideas or mathematical algorithms is ineligible for patent protection. *O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 113 (1854); *Benson*, 409 U.S. at 71. These cases effectively establish a clear boundary of ineligibility for patent protection to safeguard the fundamental constitutional requirement that laws of nature, abstract ideas, mathematical propositions and algorithms be left unrestrained by patents.

This Court stated in *Flook* that to be eligible for patent protection, "[a] process itself, not merely the mathematical algorithm, must be new and useful." 437 U.S. at 591, observing also that it is "incorrect [to] assume[] that if a process application implements a principle in some specific fashion, it automatically falls within the patentable subject matter of § 101... ." 437 U.S. at 593. Such an assumption, the Court said, is based on an impermissibly narrow interpretation of prior cases, including specifically *Benson,* and is "untenable" because "[i]t would make the determination of patentable subject matter depend simply on the draftsman's art and would ill serve the principles underlying the prohibition against patents for 'ideas' or phenomena of nature." *Id.*

In alignment with *Benson* and *Flook*, this Court's decision in *Diamond v. Diehr* held that structures or processes must, when considered as a whole, perform functions intended to be covered by patent law in order to be eligible for patent protection. 450 U.S. at 192. *Diehr* followed and upheld the core holdings of both *Benson* and *Flook*. *Id.* at 191–193 ("[o]ur reasoning in *Flook* is in no way inconsistent with our reasoning here").

Benson, *Flook*, *Diehr*, and the other decisions of this Court regarding patentable subject matter consistently established that the inquiry into whether subject matter is eligible for patenting is one of substance, not form. This Court requires that one look not simply at the language of the patent claim to see if it recites a structure of multiple steps or components, but also at the practical effect of the claim to see if it in fact covers—or otherwise would restrict the public's access to—a principle, law of nature, abstract idea, mathematical formula, mental process, algorithm or other abstract intellectual concept.

This substantive standard ensures that skilled patent draftsmanship is not capable of overcoming one of the core doctrines of patent law recognized by this Court for more than 150 years that "[a] principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right." *Le Roy v. Tatham*, 55 U.S. (14 How.) 156, 175 (1853); *Funk Bros.*, 333 U.S. 127, 130 (1948); *Benson*, 409 U.S. at 67 ("[p]henomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work"). Despite the arguments made by Petitioners and their *amici* to the contrary, this Court has clearly and unambiguously limited the scope of patentable subject matter to exclude software from its ambit in the most definite terms.

In *Benson*, this Court held invalid a software patent directed to a specific application of a generic formulation because "the mathematical formula involved here has no substantial practical application except in connection with a digital computer, which means that if the judgment below is affirmed, the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself." 409 U.S. at 71–72.

The holding of *Benson* is properly applicable to all software, because a computer program, no matter what its function, is neither more nor less than the representation of one or more algorithms. Further, just as claiming fifty—or even a thousand—laws of nature is no more patentable than claiming a single law of nature, no form of software, regardless of how many algorithms or formulas it comprises, is patentable: It will always be merely and solely made up of algorithms for computers to execute, written down in a form comprehensible to human beings for them to study and expand upon.

This Court's decision in *Diehr* is not to the contrary. It followed the teaching of *Benson*, and determined that the invention there claimed was not substantially the software, but rather the totality of an "industrial process for the molding of rubber products," which is undeniably included within the realm of patentable subject matter. 450 U.S. at 191–93. Had the applicant sought to claim the software used in that process by itself, however, this Court would have most assuredly found it to be unpatentable subject matter just as it had in *Benson*.

In *Diehr*, this Court observed:

> When a claim recites a mathematical formula (or scientific principle or phenomenon of nature), an inquiry must be made into whether the claim is seeking patent protection for that formula in the abstract. A mathematical formula as such is not accorded the protection of patent laws, and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment.

450 U.S. at 191 (internal citation omitted). This result—which makes software describing a portion of the solution to a practical problem unpatentable on its own, outside the real-world context of the problem and its solution—is not only in accord with the rest of this Court's patent jurisprudence, it is also the best way to protect innovation in software and the only way that fully comports with both Article I, Section 8 and the First Amendment.

II. Excluding Software From Patentable Subject Matter Maximizes Innovation In Software

If mathematics were patentable, there would be less mathematical innovation. Only those who were rich enough to pay royalties, or who benefited from subsidization by government, or who were willing to sign over the value of their ideas to someone richer and more powerful than themselves, would be permitted access to the world of abstract mathematical ideas. Theorems build upon theorems, and so the contributions of those who could not pay rent—and all the further improvements based upon those contributions—would be lost.

For more than a quarter century, beginning with a few stalwart thinkers and exponentially increasing in size and influence, a movement to build computer software by sharing—treating software programming languages like mathematical notation, for the expression of abstract ideas to be studied, improved, and shared again—has revolutionized the production of software around the world. The "free software movement," believes, like this Court, that computer software expresses abstract ideas, and therefore concludes that the ideas themselves will grow best if left most free to be learned and improved by all. It has attracted hundreds of thousands, soon millions of programmers around the world to the making of new and innovative software through the social process that for centuries has been the heart of Western science: "share and share alike."

Free software, often referred to by commercial entities as "open source software," to prevent confusion between the social freedom of its making and the price at which they sell copies, has become the single most influential body of software around the world. Free software operating systems now power everything from cellphones to home appliances to supercomputer clusters. There is no major or minor computer hardware architecture, no class of consumer electronics, no form of network hardware connecting humanity's telephone calls, video streams, or anything else transpiring in the network of networks we call "the Internet" that doesn't include free software. The most important innovations in human society during the last decade, the World Wide Web and the Wikipedia, were based on and are now dominated by free software and the idea of free knowledge sharing it represents.[2]

This explosion of technical innovation has occurred for two primary reasons. First, the principle rule of free software, the required sharing of computer program source code, has allowed young people around the world to learn and apply their skills by studying and improving real software doing real jobs in their own and others' daily lives. This process has enabled the incremental improvement of the art by everyone, rather than by the necessarily small number of programmers working for any one firm with proprietary control of source code. Second, by creating a "protected commons" for the free exchange of ideas embodied in program source code, the free software copyright licensing structure has enabled cooperative interactions among competing firms: each firm has been assured of permanent continuing access to the improvements in program code made by all other firms, which were required to make the source code of those improvements freely available to all users. Thus firms were able to increase their levels of investment in cooperative production, and were able to exchange ideas with academic researchers, secure in the knowledge that those investments would not be appropriated by others claiming exclusive rights.

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[2] The brief submitted by *amici* Lee A. Hollar and IEEE is therefore entirely wrong in claiming that the free software movement's hostility to software patenting results from a similarity between "underdeveloped economies" and free software programmers. Brief of Lee A. Hollar and IEEE-USA at 21 n.31. Far from being involved in "cloning" the software of others, free software or "open source" programmers have been responsible for the most important technical innovations in the field over the last twenty years. The objection of the free software community to software patents stems not from their desire to misappropriate the work of others, but rather from the belief that the free exchange of information is a cornerstone of free societies.

The principle that innovation is made possible by the free exchange of ideas is not recent, and is not limited to software. Indeed, our constitutional system of free expression since Thomas Jefferson is based on the recognition that control of ideas by power has never produced more ideas than their free and unrestricted circulation. The history of western science since the 17th century is one long testament to this truth, and it is that very history which gave rise to the patent system, whose exclusion of "abstract ideas," "facts of nature," and "algorithms" is as much as recognition of the principle as is the basic constitutional policy of offering temporary legal benefits in return for prompt and complete disclosure of technological discoveries to the public.

This Court has recognized the growth and innovation in the software industry in the absence of patent protection. In *Benson*, this Court noted that "the creation of programs has undergone substantial and satisfactory growth in the absence of patent protection and that copyright protection for programs is presently available." 409 U.S. at 72 (quoting "To Promote the Progress of . . . Useful Arts," Report of the President's Commission on the Patent System (1966)). A few years later, in *Diehr*, the Court observed that "[n]otwithstanding fervent argument that patent protection is essential for the growth of the software industry, commentators have noted that 'this industry is growing by leaps and bounds without it.'" 450

U.S. at 217 (internal citations omitted). Recent empirical data also suggests that software patents actually stifle innovation instead of promoting it. See J. Bessen and M. Meurer, *Do Patents Perform Like Property?*, Academy of Management Perspectives, pp. 8–20 (Aug. 2008) ("The direct comparison of estimated net incentives suggests that for public firms in most industries today, patents may actually discourage investment in innovation.")

III. The First Amendment Prohibits Construing The Patent Act To Permit The Patenting Of Abstract Ideas

This Court held in *Eldred v. Ashcroft*, 537 U.S. 186 (2003), that the First Amendment precludes the extension of statutory monopolies to abstract ideas. *Eldred*, 537 U.S. at 219. As you there said, the near-simultaneous adoption of the Patent and Copyright Clause and the First Amendment indicates that these laws are fundamentally compatible. This compatibility, however, depends on a construction of the patent and copyright laws that preserves First Amendment principles, including the freedom to communicate any "idea, theory, and fact." *Id.*

Eldred identified two mechanisms in copyright law that are necessary to accommodate this principle. First, the idea/expression dichotomy limits copyright's monopoly to an author's expression, leaving ideas "instantly available for public exploitation." *Id.* Second, the fair use doctrine allows the public to use even copyrighted expression for some purposes, "such as criticism, comment, news reporting, teaching..., scholarship, or research." *Id.* at 220.

Patent statutes, which depend on the same constitutional grant of authority as copyright statutes are similarly limited by the First Amendment. *See Eldred*, 537 U.S. at 201 ("Because the Clause empowering Congress to confer copyrights also authorizes patents, congressional practice with respect to patents informs our inquiry."). The presence of an unwavering exemption for abstract ideas reconciles patent law with the First Amendment in a fashion similar to the idea/expression dichotomy's crucial role in reconciling copyright and freedom of speech. The presence of a limiting principle is even more necessary with respect to patent law than with respect to copyright, because, as you observed in *Eldred*, "the grant of a patent... prevent[s] *full use* by others of the inventor's knowledge." 537 U.S. at 217 (emphasis added) (internal citation omitted). Patents can and do limit the application of knowledge to produce a new machine or to transform an article into a different state or thing, but they cannot constitutionally limit the communication of knowledge or ideas. *Eldred* teaches that, without this limitation, determining the scope of patent eligibility in each individual case would raise First Amendment questions of great difficulty. Patent law also recognizes no analogue to fair use, previously described by this Court as the second bulkwark of constitutional harmony between copyright and free expression. 537 U.S. at 219-220. The absence of any provision for fair use substantially increases the constitutional difficulty when patents are sought and granted for expressions of abstract ideas.

Therefore, patents on software standing alone, which could be infringed by the dissemination of computer program source code as well as by the execution of such code by a special-purpose tool or in the course of an industrial process with a material result, disturb the "definitional balance" between the First Amendment and the Patent Act. *Eldred*, 537 U.S. at 219. In its unprocessed source code form, software is merely the expression of abstract ideas in human language—a description of a sequence of steps that will produce a particular result (i.e. an "algorithm"). The source code of a program which performs the steps described in a software patent is distinguishable from the literal patent only in that it expresses the same steps in a different language. Therefore, since anyone may copy or publish the actual patent without infringing, it must also be permissible to communicate its claims in source code form.

The sharing of source code is also essential to "scholarship and comment," two categories of speech recognized in *Eldred* and *Harper & Row, Publishers v. Nation Enters.*, 471 U.S. 539, 560 (1985), as particular First Amendment concerns. Computer science textbooks, for example, rely heavily on source code and pseudo-code to communicate concepts and describe useful algorithms. *See, e.g.,* Brian W. Kernighan and Dennis M. Ritchie, *The C Programming Language* (Prentice Hall 1978). Likewise, computer science students are often required to express their answers to test questions in a real or hypothetical programming language. And without the use of source code, it is difficult for developers to comment on whether an idea can be implemented, to comment on an algorithm's performance, or to suggest improvements.

Moreover, First Amendment concerns cannot be avoided by exempting source code and limiting patent protection to software which has been converted to executable form, or which has actually been executed. Recent rulings, such as the Federal Circuit's decision in *Metabolite Labs, Inc. v. Laborator Corp. of Am. Holdings*, 370 F.3d 1354 (Fed. Cir. 2004), *cert. dismissed*, 548 U.S. 124 (2006), demonstrate that secondary liability would still restrict the communication of ideas expressed in source code. In *Metabolite*, a medical testing laboratory was successfully sued for inducement to patent infringement for telling doctors what steps to take to correlate the presence of amino acids in body fluids with a vitamin deficiency. 370 F.3d at 1358. Once communicating the content of a patent to doctors is held inducement to patent infringement, constitutionally-protected communication among programmers will inevitably be chilled.

This result would be a restriction on the expression of abstract ideas. The court below correctly interpreted the Act to avoid this dubious outcome, by requiring more than an abstract expression of an idea: either a machine specially adapted to the implementation of that idea, or a transformation of the physical environment mediated or controlled by software. Any other construction of the statute would raise serious constitutional questions.

CONCLUSION

For the foregoing reasons, the decision below should be affirmed.

Respectfully submitted.

EBEN MOGLEN
Counsel of record
DANIEL RAVICHER
MICHAEL A. SPIEGEL
MISHI CHOUDHARY
AARON WILLIAMSON
Software Freedom Law Center
1995 Broadway, 17th Floor
New York, New York 10023
212-461-1900

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IN THE

Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,

Petitioners,

v.

DAVID J. KAPPOS, UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR, PATENT AND TRADEMARK OFFICE,

Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF SOFTWARE & INFORMATION INDUSTRY ASSOCIATION (SIIA) AS AMICUS CURIAE IN SUPPORT OF RESPONDENT

SCOTT E. BAIN
Counsel of Record
SOFTWARE & INFORMATION
INDUSTRY ASSOCIATION
1090 Vermont Avenue, NW
Suite 600
Washington, DC 20005
(202) 789-4492

Attorney for Amicus Curiae SIIA

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BRIEF OF SOFTWARE & INFORMATION INDUSTRY ASSOCIATION (SIIA) AS AMICUS CURIAE IN SUPPORT OF RESPONDENT

STATEMENT OF INTEREST OF THE AMICUS CURIAE[1]

Amicus, the Software & Information Industry Association ("SIIA"), is the principal U.S. trade association of the software and digital content industries. It comprises business divisions for software, financial information services, online content, and education technology. SIIA's collective membership sits at the crossroads of the issues raised in this case, as well as the ongoing debate surrounding software and "business method" patents generally. SIIA members have benefited from owning thousands of patents in these fields, and licensing and enforcing them. Yet they also rely critically on appropriate boundaries to patent protection. These boundaries, too, preserve their ability to innovate, and avoid market inefficiencies created by patents of questionable validity.

SIIA has grappled with important intellectual property issues in the software and content industries for many years. SIIA is the nation's oldest and largest association representing software and content companies.[2] Its members range from start-up firms to some of the largest and most recognizable corporations in the world. SIIA member companies are leading providers of, among other things:

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[1] Pursuant to this Court's Rule 37.6, *amicus* affirms that no counsel for a party authored this brief in whole or in part and that no person other than *amicus* and its counsel made a monetary contribution to its preparation or submission. The parties' letters consenting to the filing of this brief have been filed with the Clerk's office.

- software publishing, graphics, and photo editing tools
- corporate database and data processing software
- financial trading and investing services, news, and commodities exchanges
- online legal information and legal research tools
- protection against software viruses and other threats
- education software and online education services
- open source software
- and many other products and services in the digital content industries.

A list of the more than 500 SIIA member companies may be found at http://www.siia.net/membership/memberlist.asp.

The real world, every day experiences of SIIA and its membership in working within the existing patent system uniquely positions SIIA to offer a practical view – a view informed by the business realities inherent in a regime that now includes many thousands of existing software and business method patents, and thousands more applications. Moreover, SIIA is an active participant in patent reform discussions being considered by the executive and legislative branches, and is intimately familiar with industry concerns regarding patent quality and interpretation of the existing Patent Act.

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[2] The Software Publishers Association ("SPA") was founded in 1984. The increasing convergence of the software and information services industries led to a 1999 merger between SPA and the Information Industry Association ("IIA"), creating the SIIA.

SIIA favors neither an expansive nor restrictive interpretation of patentable subject matter. Rather, SIIA urges a rational, predictable application of the statute consistent with established principles of patent law, within constitutional limits. In essence, that means that most software will be patentable subject matter; some business methods will not.

INTRODUCTION AND SUMMARY OF THE ARGUMENT

In the years following the Supreme Court's opinion in *Diamond v. Diehr,* 450 U.S. 175 (1981), the Federal Circuit decided a line of cases that confirmed the patent eligibility of software or computer implemented inventions, including software that carried out "mathematical algorithms" or "business methods." *See, e.g., In re Alappat,* 33 F.3d 1526 (Fed. Cir. 1994) (*en banc*); *State St. Bank & Trust Co. v. Signature Fin. Services Group, Inc.,* 149 F.3d 1368 (Fed. Cir. 1998); *AT&T Corp. v. Excel Communications, Inc.,* 172 F.3d 1352 (Fed. Cir. 1999). The U.S. software and information industries have matured in this legal regime of patent availability, and the patent standards under *Alappat, State Street, AT&T, et al.* have played a meaningful role in this success. The companies in these industries, and those that invest in them, have relied heavily upon the availability of software patent protection, among other legal protections, in formulating their intellectual property and business strategies. Material change in the application of section 101 to computer software inventions would be contrary to settled law, and detrimental to the software and information industries.

The Federal Circuit's attempts in these cases, however, to distill a single, predictable "test" for patentable subject matter have proven troublesome and confusing. The present case appears to perpetuate this confusion, even though the appellate court (and the Patent and Trademark Office) ultimately reached what SIIA believes to be the correct result. SIIA thus urges the Court to affirm the result below, rejecting Petitioner's patent application, but also to clarify the legal standard for patentable subject matter in a way that is faithful to Supreme Court precedent.

Specifically, abstract ideas, mental processes, and natural phenomena and laws may not be patented. As this Court has stated repeatedly, an individual may not "preempt" all uses of a fundamental principle. But while the "machine or transformation test" is useful in identifying an unpatentable abstract idea, it is not the single, dispositive test for eligibility. If a claimed invention does not transform an article to a different state or thing, nor is tied to a particular machine or apparatus, then it presumptively is an abstract idea or mental process. Barring a compelling showing otherwise, it should be rejected as preempting practice of the fundamental principle, rather than an application thereof. But the "machine or transformation" test is not necessarily conclusive in every conceivable case. For example, a patent claim to heating an ice cube to make water would transform the article to a different state, and thus satisfy the test. But without more, this claim simply seems to embody a natural phenomenon or law and should be unpatentable as such. Many similar examples can be imagined.

Part I in the Argument below explains that software related inventions have been patentable under a variety of different "tests" applied by the Federal Circuit, including the "useful, concrete, tangible result" test apparently discarded in the *en banc* opinion below. Regardless of the ultimate linguistic formulation of the test, software inventions should and must remain patentable subject matter. That result is consistent with longstanding precedent, and enormously significant, settled expectations within the industry.

Part II asserts that the language and history of the Patent Act supports requiring an invention to have some connection to machines, articles of manufacture, or compositions of matter. However, the Federal Circuit erred in announcing the "machine or transformation test" as the single, dispositive standard for patentable subject matter. The test is, among other things, a useful construct for determining whether an invention is a mere abstraction or mental process. A claim that fails the test would be presumptively unpatentable. But even a claim that passes the test still would require analysis of whether the claim preempts all uses of a natural phenomenon or natural law.

Part III concludes that Petitioner's claim 1 is not directed to patentable subject matter. The claim does not encompass a "useful process" as that term has been interpreted by the courts, but rather claims an abstract idea.

ARGUMENT

I. THE COURT SHOULD NOT DISTURB SETTLED LAW AND EXPECTATIONS REGARDING THE PATENTABILITY OF SOFTWARE

The dubious patent application at issue in this case invites an opinion emphasizing the constraints of patent law. Indeed, the proliferation of lawsuits asserting patents of questionable validity has made patent quality one of the most pressing issues of the day for the technology industries. *See, e.g.,* Written Comments of Software & Information Industry Association, Federal Trade Commission Public Hearings Concerning the Evolving Intellectual Property Marketplace (February 5, 2009), http://archive.siia.net/govt/docs/pub/Comments_on_FTC_Hearings_and_Evolving_IP_Marketplace.doc (hereinafter "SIIA Comments to the FTC (2009)"). Proper interpretation of section 101 is an important part of the equation for improving patent quality and, as explained in Parts II and III herein, requires rejection of Petitioner's patent claim. The Patent and Trademark Office, and a near-unanimous Federal Circuit, reached the correct result in this case. But in affirming that result, it is equally important that the Court not establish new legal standards disturbing the established premise that software inventions are patentable subject matter.

Petitioner's patent claim does not involve software. However, dicta in the Federal Circuit's *en banc* opinion, and the arguments of some *amici* here, question whether software would be patentable subject matter under the Federal Circuit's holding and various other tests proposed. SIIA submits that software has long been considered patentable subject matter, and that the Court should not disturb these precedents and the enormous, critical investments built around them.

A. Patent Eligibility of Software is Well Established

For nearly two decades, perhaps longer, U.S. courts have consistently held software inventions to be patentable subject matter. The Federal Circuit's 1994 opinion in *In re Alappat* often is cited as ushering in the "modern" age of software patenting. Reviewing the case *en banc* to determine whether software was capable of patent protection, the court held, "programming creates a new machine, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software." *Alappat*, 33 F.3d at 1545. Many thousands of U.S. patent applications have been filed and granted on software inventions, with many of these licensed and enforced, since the *Alappat* decision.

Subsequent decisions clarified that software implementing business methods, functional algorithms, memory characteristics, and other processes and characteristics were patentable subject matter. *See State Street.*, 149 F.3d at 1372-73 (holding that there is no "business method exception" to otherwise-statutory subject matter);[3] *AT&T*, 172 F.3d at 1354-55 ("the judicially-defined proscription against patenting of a mathematical algorithm, to the extent such a proscription still exists, is narrowly limited to mathematical algorithms in the ***abstract***") (emphasis added); *In re Lowry*, 32 F.3d 1579, 1583 (Fed. Cir. 1994) (claim to "functional characteristics of [ ] memory," namely data structures, is statutory subject matter). The Federal Circuit also confirmed more than a decade ago that protection of software inventions can be obtained in various patent claiming formats. *See AT&T*, 172 F.3d at 1357-58 ("we consider the scope of section 101 to be the same regardless of the form – machine or process – in which a particular claim is drafted").

The Federal Circuit's interpretation of section 101 was consistent with obligations in a contemporaneously completed treaty advocated by the U.S. government. Extensive negotiations in the Uruguay Round produced the World Trade Organization (WTO) and its 1994 Agreement on Trade Related Aspects of Intellectual Property ("TRIPS"). TRIPS imposes a number of basic patent law obligations upon member states, including scope of patentable subject matter:

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[3] As Respondent explains in its brief (at 6, 40, 48), *State Street* included dicta suggesting that any process yielding "a useful, concrete and tangible result" is patentable subject matter. Some have interpreted the case to establish a nearly boundless standard for patenting business methods and other processes. But the oft-cited passage was not the holding. Indeed, the patent claim at issue in the case was not even a method or process. It was a "means plus function" claim reciting various computer hardware components. *See State Street*, 149 F.3d at 1371. In other words, it was (as the court observed) "a machine." *Id.* at 1372.

> Subject to [exceptions involving health, safety and biology] patents shall be available for any inventions, *whether products or processes, in all fields of technology*, provided that they are new, involve an inventive step and are capable of industrial application.

Agreement on Trade Related Aspects of Intellectual Property, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, Article 27 (emphasis added).

The Federal Circuit's endorsement of software patenting in the 1990s was particularly fortuitous, and inventors' growing reliance on patents necessary, because during the same time period other courts appeared to narrow *copyright* protection for software. *See, e.g., Apple Computer Inc. v. Microsoft Corp.*, 35 F.3d 1435 (9th Cir. 1994) (effectively limiting scope of protection for Apple's graphical user interface); *Lotus Dev. Corp. v. Borland Int'l, Inc.*, 49 F.3d 807 (1st Cir. 1995) (denying copyright protection to aspects of a user interface that the court deemed functional), *aff'd per curiam by an equally divided Court*, 516 U.S. 233 (1996); Daniel W. McDonald, *et al.*, *Intellectual Property & Privacy Issues on the Internet*, 79 JOURNAL OF THE PATENT & TRADEMARK OFFICE SOCIETY 31, 49 (1997) (after the *Apple* and *Borland* decisions, "[i]t is better to seek patent protection if you are concerned about protecting anything other than the expressive elements in the [computer] program."). With large amounts of capital flowing into software development and software companies, it was critical that new innovations be accompanied by a promise of some return on that investment, in the form of exclusive rights.

As Respondent correctly observes (Resp. Br. at 37), the patentability of software *per se* is not directly raised in this case, despite dicta in the Federal Circuit's *en banc* opinion. Petitioner's claim 1 does not recite software, nor does it require a computer to implement the claimed steps. Moreover, the precise holding below – that a process must be tied to a machine or transform an article – would not appear to materially change the landscape of patenting software (which at some point must be executed on a machine). Dicta in the opinion, however, calls into question whether the court changed the scope of section 101 as related to software and computer inventions. After holding that implementation on a machine generally is sufficient to satisfy section 101, the court stated:

> We leave to future cases the elaboration of the precise contours of machine implementation, as well as the answers to particular questions, *such as whether or when recitation of a computer suffices* to tie a process claim to a particular machine.

In re Bilski, 545 F.3d 943, 962 (Fed. Cir. 2008) (*en banc*) (emphasis added).

In the months following this decision, some lower courts may have interpreted this passage as a bell-weather call for narrowing software patent protection, and have rejected claims that may have been eligible for patent protection before *Bilski*. *See, e.g., Cyber-Source Corp.* v. *Retail Decisions, Inc.*, 620 F. Supp. 2d 1068 (N.D. Cal. 2009); *Ex Parte Godwin*, No. 2008-0130, 2008 WL 4898213, at *2 (BPAI Nov. 13, 2008). Similarly, some *amici* call for the Court to use this case as a vehicle for substantially narrowing software patent eligibility under section 101.

In SIIA's view, a holding that upsets the long held expectations and case law that software generally is patentable subject matter would be unwarranted, and may have dire economic consequences.[4] The Court has been mindful of this concern in other patent cases. *See, e.g., Festo Corp.* v. *Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 739 (2002) ("Courts must be cautious before adopting changes that disrupt the settled expectations of the inventing community."); *cf. Warner-Jenkinson Co.* v. *Hilton Davis Chem. Co.*, 520 U.S. 17, 32 (1997) ("[W]e should be extremely reluctant to upset the basic assumptions of the PTO without substantial reason...."). This case should be no exception.

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[4] Whether the novelty and nonobviousness requirements of the Patent Act properly have been applied to software and business method inventions in recent years is a different question, not at issue in the case before this Court.

B. The Software and Information Industries Have Continued to Grow and Thrive in the Age of Software Patenting

The prevailing interpretation that section 101 encompasses software inventions has not given rise to circumstances justifying a change. To the contrary, the U.S. software and information industries thrive more than a decade after the Federal Circuit's decisions in *Alappat, State Street* and *AT&T*.

Revenues generated by the nation's software and information industries reached $564 billion annually by 2005, up by more than 10 percent since the beginning of this decade. *See* Software & Information Industry Association, *Software and Information: Driving the Knowledge Economy* (January 24, 2008) at 7-8, http://www.siia.net/estore/globecon-08.pdf (hereinafter "*Driving the Knowledge Economy*"). It is now the fourth largest industry in the U.S., behind transportation equipment, hospital care, and chemicals manufacturing. *See id.* The software and information industries employed more than 2.7 million Americans in 2006, up 17% from 1997. *See id.* at 8. This increase added more than 400,000 American jobs. *See id.* And the Bureau of Labor Statistics predicts there will be more than two million additional openings in software and information occupations between 2006 and 2016. *See* U.S. Bureau of Labor Statistics, *National Industry-Specific Occupational Employment and Wage Estimates,* http://www.bls.gov/oes/current/oessrci.htm#51 (last modified Oct. 24, 2007).

The functionality, and practical utility, of software have made it a ubiquitous and integral tool in almost every U.S. industry. Software programs "allow[ ] organizations to fundamentally re-engineer processes," lower barriers to entry, reduce various costs, improve customer service and product delivery, and ultimately better meet market demands." *Driving the Knowledge Economy* at 14. Moreover, the integration of software with information services such as databases and financial research has resulted in new and useful functionality – and ultimately a more convenient, more productive, and better user experience. *See id.* at 14-17. Innovations have spawned entirely different paradigms, such as the growing "software as a service" ("SaaS") offerings, which themselves have triggered further software-related innovation. *Id.* at 5, 19. One cannot predict the future path of innovation and what forms "software" might take. It is important that the law not constrain that path, and that the same principles apply regardless of such form.

The financial services industry has benefited tremendously from software inventions. Indeed, "[p]erhaps no sector of the 'old' economy has been more directly affected by IT [information technology, including software] than the financial-services sector." *Driving the Knowledge Economy* at 14. New functions enabled by computer technology have "powered [the] transformation" of the industry, resulting in "superior offerings," "new distribution channels," "easier [ ] consumer[ ] access," and more competition and consumer choice in the decade following *State Street*. *Id.* at 14-15. In short, "software and information have become essential to financial services." *Id.* at 15. In 2007, the banking sector alone invested over $240 billion worldwide in computer, software, and IT services. *See* Gartner, Inc., *Forecast: Banking IT Spending, Worldwide, 2005-2010*, http://www.gartner.com/DisplayDocument?id=501396&ref=g_sitelink (February 20, 2007). Similarly, software and related technology have substantially driven innovations in the health care, education, and other industries. *See Driving the Knowledge Economy* at 14-16. And in turn, financial capital has flowed into software development, further fueling the engine of innovation in the software industry. *See, e.g.*, Organisation for Economic Co-Operation and Development, *Measuring the Information Economy* (2002) at 11, http://www.oecd.org/dataoecd/16/14/1835738.pdf.

Participants in the software and information industry rely on the existing patent regime as an important foundation to justify and validate their investment in new innovation. *See, e.g.,* Julie E. Cohen & Mark A. Lemley, *Patent Scope and Innovation in the Software Industry*, 89 CAL. L. REV. 1, 5 (2001). Patent protection is now well entrenched as an important part of the U.S. software industry. *See, e.g.,* U.S. Congress, Office of Technology Assessment, *Finding a Balance: Computer Software Intellectual Property, and the Challenge of Technological Change, OTA-TCT-527* (Washington, DC: U.S. Government Printing Office, May 1992). Thousands of new patents are acquired in this industry each year, and thousands of licenses on computer and software-related inventions currently are in force.[5] There may have been a time long ago when the patent-eligibility of a computer or software related invention was in question, the value debatable, and pursuit thereof rare. But that is no longer the case or practice in the industry.[6] A decision by this Court that puts into question the patent eligibility of software inventions would thus invite disastrous effect on these now longstanding practices.

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[5] Moreover, related licenses provide the legal framework for other significant protection measures, relied upon by a variety of industries. One example is the licensing paradigm used in some digital rights management (DRM) implementations. *See, e.g.,* Bruce G. Joseph & Scott E. Bain, *Copyright in the Digital World: Basics, Law and Policy,* BRIEFLY, NATIONAL LEGAL CENTER FOR THE PUBLIC INTEREST (Vol. 9 No. 12, December 2005) at 74-80, http://www.wileyrein.com/resources/documents/pu2292.pdf (discussing licensing mechanism underlying the encryption technology "CSS" that protects motion pictures on prerecorded DVDs, and other technical protection measures).

[6] To the extent some observers have expressed concern that the software and information industries may become ensnared in a thicket of patents, this concern highlights the need for continued, diligent enforcement of the novelty (§ 102), nonobviousness (§ 103), and definiteness (§ 112) standards by the U.S. Patent and Trademark Office and the courts. The U.S. Congress also is considering ways to improve patent quality, as part of ongoing patent reform discussions. A radical judicial narrowing of section 101 is not the wise course for improving patent quality in the software and information industries, or any other industry.

II. THE "MACHINE OR TRANSFORMATION" TEST IS A USEFUL PRESUMPTION OR CONSTRUCT, BUT IS NOT THE SOLE TEST FOR PATENTABLE SUBJECT MATTER

Construing the meaning of the subject matter provision of the Patent Act, 35 U.S.C. § 101, begins with the language of the statute. *See Diehr,* 450 U.S. at 182. Section 101 states:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new or useful improvement thereof, may obtain a patent therefore, subject to the conditions of this title.

35 U.S.C. § 101. As Petitioner has argued, the statute on its face recites "*any*" new and useful process. On its literal terms, that would include any series of steps.

But the Court has held that the meaning of "process" as used in section 101 is narrower than its ordinary meaning. *See Parker v. Flook,* 437 U.S. 584, 588-89 (1978) ("The holding [in *Benson*] forecloses a purely literal reading of § 101."). Specifically, a claim is not a patent-eligible "process" if it preempts all practice of a "law of nature, natural phenomenon, [or] abstract idea." *Diehr,* 450 U.S. at 185; *Flook,* 437 U.S. at 589; *Gottschalk v. Benson,* 409 U.S. 63, 67 (1972). Such fundamental principles are "part of the storehouse of knowledge of all men, free to all men and reserved exclusively to none." *Funk Bros. Seed Co. v. Kalo Inoculant Co.,* 333 U.S. 127, 130 (1948); *see also Le Roy v. Tatham,* 55 U.S. (14 How.) 156, 175 (1852) ("A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right."); *O'Reilly v. Morse,* 56 U.S. (15 How.) 62, 112-113 (1854); *Rubber-Tip Pencil Co. v. Howard,* 87 U.S. (20 Wall.) 498, 507 (1874) ("An idea of itself is not patentable, but a new device by which it may be made practically useful is.").

The historical context of the Patent Act also supports a narrower than literal reading of the word "process." The categories of patentable subject matter, and their meaning and limits, derive from the constitutional grant of authority and early patent laws. *See, e.g., In re Comiskey,* 499 F.3d 1365, 1374-75 (Fed. Cir. 2007); *see also In re Nuijten,* 500 F.3d 1346, 1352 (Fed. Cir. 1997); *id.* at 1358 (Linn, J., concurring-in-part and dissenting-in-part). Article 1, Section 8, clause 8 of the Constitution merged proposed provisions authorizing copyrights and patents, respectively. *See* S. REP. NO. 82-1979 (1952), *reprinted in* 1952 U.S.C.C.A.N. 2394, 2396. It states:

> The Congress shall have Power ... To promote the Progress of Science and useful Arts by securing for limited Times to Authors and Inventors the exclusive Right to

> their respective Writings and Discoveries.

U.S. CONST. art 1, § 8, cl. 8. The terms "useful Arts," "Inventors," and "Discoveries" refer to the patent authority. Thus, the first and subsequent patent laws have been "acts to promote the useful arts." *See* S. REP. NO. 82-1979, 1952 U.S.C.C.A.N. 2394, 2398, 2409-10. And indeed, the first Patent Act of 1793 allowed patents on "any new and useful art...." *Bilski,* 545 F.3d at 966 (Dyk, J., concurring). This phrase carried through subsequent revisions, until the word "art" was replaced by "process" in the 1952 Patent Act. The term "process" is understood to have the same meaning as "art" in the prior incarnations. *See Comiskey*, 499 F.3d at 1375.

In the late 18th century, "art" referred to "[t]he power of doing something not taught by nature and instinct"; "[a] science"; "[a] trade"; "[a]rtfulness, skill, dexterity." *Nuijten*, 500 F.3d at 1361 (Linn, J., dissenting-in-part) (citing contemporary dictionary). This understanding is relevant to the scope of today's statute. *See, e.g.,* ESKRIDGE, WILLIAM JR., DYNAMIC STATUTORY CONSTRUCTION 323 (Harvard University Press 1994) (when construing a statute, "consider dictionaries of the era in which the statute was enacted"); *McNally v. United States*, 483 U.S. 350, 370 (1987) (consulting dictionaries of the time of the act). Moreover, the Founders included the limits in the patent clause with particular purpose, in part to prevent the kinds of general business monopolies previously granted by the English Crown. *See Comiskey*, 49 F.3d at 1375.

The historical context suggests that the constitutional authority and the original scope of the statute, specifying processes (arts) as patent eligible, were not meant to encompass any and all series of steps that had some beneficial use. *See also* Giles S. Rich, *Principles of Patentability*, 28 GEO. WASH. UNIV. L. REV. 393, 393-94 (January, 1960) (not all useful processes are patentable subject matter). Accordingly, in cases interpreting the phrase "useful process" in section 101, it has been constrained by the Framers' conception of "useful arts." *See, e.g., Diehr*, 450 U.S. 175. The Court's guidance on statutory interpretation supports this construct. *See, e.g., Public Citizen v. U.S. Dep't of Justice,* 491 U.S. 440, 466 (1989) ("It has long been an axiom of statutory interpretation that where an otherwise acceptable construction of a statute would raise serious constitutional problems, the Court will construe the statute to avoid such problems unless such construction is plainly contrary to the intent of Congress.") (quotations omitted); *Clark v. Martinez*, 543 U.S. 371, 380 (2005) (adopt the construction that would avoid constitutional problems).[7] Finding literally any useful process to be patentable subject matter arguably exceeds the constitutional authority in the patent clause.

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[7] Parties urging an unlimited reading of section 101 sometimes assert that the 1952 Act legislative history states that the Act should protect "anything under the sun that is made by man." S. REP. NO. 82-1979, at 5; H.R. REP. NO. 82-1923 (1952). But Congress used that phrase only in describing machines and manufactures. *See* S. REP. NO. 82-1979, at 5 ("A person may have 'invented' a machine or manufacture, which may include anything under the sun that is made by man, but it is not necessarily patentable under section 101 unless the conditions of the title are fulfilled."); H.R. REP. NO. 82-1923 (same).

The Federal Circuit has recognized this history in prior rulings, and in this case correctly rejected the literal reading of "process" as suggested by the Petitioner. But the court erred in ruling that the sole test for whether a claimed process is patentable is whether it "is tied to a particular machine or transforms an article to a different state or thing." In *Diehr* and *Benson*, this Court termed the machine or transformation test the "clue" to patentability of a process. *Diehr*, 450 U.S. at 184 (quoting *Benson*, 409 U.S. at 70); *see also Flook*, 437 U.S. at 588 n.9. The Court suggested that this formulation is not exclusive and may evolve with the continued progress of "technology." *Benson*, 409 U.S. at 71. Finding no such exceptions in subsequent cases, the Federal Circuit endorsed the test as "the" rule. But in *Diehr, Benson,* and other cases citing the test, the context was whether the claimed process was *abstract*. The machine or transformation test provided a useful lens for determining abstraction. But it does not, presumably, change the fundamental rule that a law of nature or natural phenomenon cannot be patented. Specifically, a patent claim cannot be recited in a way that effectively preempts all uses of a law of nature or natural phenomenon.

The "machine or transformation" test, as previously applied by the Court, seemed to embody a presumption, perhaps a strong one, that processes not tied to a machine and not transforming an article are abstract ideas – and therefore unpatentable. But the Federal Circuit's new bright line rule goes too far. Some troublesome applications are conceivable. A claim to applying heat to an ice cube to create water, for example, may be a patentable process under that rule. It transforms the article (an ice cube) to a different state or thing (water). This Court's more general preemption rulings, applied properly, would preclude this claim, as preempting all uses of the natural phenomenon of heat melting ice. As Respondent points out, many similar examples are conceivable. Resp. Br. at 34-36.

Thus, in this case, the Court should return the section 101 analysis to the more fundamental principles described in *Benson*, *Flook*, and *Diehr*, and clarify the meaning of the "machine or transformation" test.

Before turning to Petitioner's patent claim, a few observations about patent quality are apt. It is well documented that patent quality in the computer and software related arts is an ongoing concern of industry and the government. "Poor patent quality and legal standards and procedures that inadvertently may have anticompetitive effects can cause unwarranted market power and can unjustifiably increase costs. Such effects can hamper competition that otherwise would stimulate innovation." Federal Trade Commission, *To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy* (October 2003), *http://www.ftc.gov/os/2003/10/innovationrpt.pdf*, Executive Summary at 5. The detrimental effects of poor quality patents are especially pernicious in the software industry. When a software publisher is developing a new computer program, "it often is extraordinarily difficult – notwithstanding the business's best efforts – to identify all of the existing patents, and pending patent applications, that may be relevant to each of the hundreds or even thousands of components that make up that new product." SIIA Comments to the FTC (2009) at 4.

The rigorous and consistent enforcement of several statutory provisions that are not at issue in this case are central to improving patent quality. The examination of claimed inventions under sections 102, 103, and 112 (as well as the task of identifying applicable prior art in each case) continues to evolve and be refined.[8]

But section 101 also plays an important role in improving patent quality. Examining patent applications takes time and money. Proper enforcement of section 101 will discourage applicants from burdening the U.S. Patent and Trademark Office with claims to ineligible inventions, will permit more efficient rejection of such ineligible applications that are filed, and will allow the office to better utilize its limited examining resources. Moreover, in litigation, a section 101 challenge to a patent's validity may be amenable to determination at an early stage of the case. By comparison, more fact-intensive defenses like obviousness may not be determined until after months (or more) of costly discovery and motions. Moreover, as Respondent argues (at 40), in some cases sections 102, 103 and 112 may not be dispositive. One can conceive of a variety of human activities that are novel (section 102), nonobvious (section 103) and definitely claimed (section 112) but yet should remain unpatentable pursuant to section 101. Resp. Br. at 41, 46 (citing methods of playing games, mediation, dating, sports moves, etc.).

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[8] SIIA's endorsement of any standard for patentable subject matter under section 101 is not intended to affect the interpretation of the other requirements for patent protection, nor provisions that Congress may pass in the future.

Thus, in short, proper interpretation of section 101 is an important ingredient to improving patent quality in the field of software. For the reasons described above, the Federal Circuit's exclusive test does not fill this need. *See, e.g.*, Scott Bain, *Patently Undecided: The Bilski Case*, INFORMATION TODAY, Vol. 26 Issue 2 (Feb. 1, 2009) at 1, http://www.infotoday.com/IT/feb09/index.shtml ("Indeed, it seems that the real winners in the *Bilski* [appellate] decision are the patent lawyers who will battle over the further contours of the law and not the investors in software and business ventures who were seeking more certainty.").

III. PETITIONER'S CLAIM 1 IS NOT PATENTABLE SUBJECT MATTER

Claim 1 of the Bilski patent application recites:

> A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:
>
> (a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumers;
>
> (b) identifying market participants for said commodity having a counter-risk position to said consumers, and
>
> (c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions.

Pet. App. 2a-3a. The Court should find, as did the Federal Circuit and the Patent and Trademark Office, that Petitioner's claim is not directed to patentable subject matter. The result is the same regardless of whether the Court (1) applies the general "preemption" rule of its prior cases, that abstract ideas, pure mental steps, or natural phenomena cannot be claimed in a way that preempts all uses thereof; (2) affirms the Federal Circuit's application of the rule that a patentable process must be tied to a machine or transform an article to a different state or thing; or (3) adopts the view of some *amici* that a patentable claim must include a "technological contribution" or be in the "technological arts." Petitioner's claim 1 appears to fail all of these tests.

First, applying the Court's guidance in *Benson, Flook,* and *Diehr,* claim 1 improperly attempts to preempt the idea of hedging financial risk in commodities transactions, without more. It is abstract, and therefore unpatentable. While the claim, like all method claims, sets forth a series of steps, these steps simply embody what is inherent to the idea of hedging: multiple transactions with counter-risk positions.

The claim is similar to a variety of claims to business methods, legal relationships, and other concepts rejected by various courts as merely consisting of abstract ideas. *See, e.g., Benson,* 409 U.S. 63 (rejecting claim that essentially covered mathematical relationship between binary and BCD numerical systems); *Flook,* 437 U.S. 584 (rejecting claim to alarm limit formula); *Morse,* 56 U.S. at 112-113 (rejecting claim to using electromagnetism for distance transmission); *Comiskey,* 499 F.3d at 1377 (rejecting claim to "arbitration method" involving establishing legal relationships). Petitioner argues that a patentable method need only produce a "useful, concrete, tangible result."[9] But the rejected patent claims in each of the foregoing cases did produce – or surely were capable of producing – useful, concrete, tangible results. They were rejected because they attempted to preempt all uses of an abstract idea, or put another way, to patent human intelligence itself. *See Comiskey*, 499 F.3d at 1379.

Second, Petitioner's claim 1 fails the "machine or transformation" test. As described above, SIIA interprets *Diehr* and other decisions of this Court as using the "machine or transformation" test as the primary tool for determining whether a claim is unpatentable as abstract, not the sole requirement for patentable subject matter as the Federal Circuit ruled below. In either case, this claim is unpatentable. On its face, it is tied to no machine or apparatus. And on its face, it transforms no article: the sole result of performing the steps recited is that "said series of market participant transactions balances the risk position of said series of consumer transactions." In other words, the claim accomplishes a change in relationships, not transformation of an article. Should the Court endorse the Federal Circuit's bright-line test, then, the claim must be rejected as unpatentable.

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[9] As referenced in f.n. 3, *supra*, litigants often cite *State Street Bank*, 149 F.3d 1368, and *AT&T*, 172 F.3d 1352 as "ruling" that a process yielding a useful, concrete, tangible result satisfies section 101. While both opinions did include that statement, processes *per se* were not at issue in either case – the claimed inventions in both cases recited *machines*. The Federal Circuit put to rest the "useful, concrete, tangible result" dicta in its opinion below. *See Bilski*, 545 F.3d at 959-960.

In prior cases, the Court declined to adopt the "machine or transformation" test as the sole test for patentable subject matter, suggesting that future cases could reveal exceptions to the machine or transformation rule. *See Benson,* 409 U.S. at 71; *Diehr,* 450 U.S. 175. SIIA is aware of no such exception to date – no patentee has overcome the "strong presumption," in effect, that a claim is abstract if it is unattached to any machine and does not transform an article. And there appears to be nothing in the present claim that would overcome such a presumption.

Third and finally, some *amici* argue that section 101 and/or patent law generally have historically required an invention to include a "technological contribution." *See, e.g., Comiskey,* 499 F.3d at 1375 ("The Constitution explicitly limited patentability to "the national purpose of advancing the useful arts – the process today called technological innovation.") (quoting *Paulik v. Rizkalla,* 760 F.2d 1270, 1276 (Fed.Cir.1985) (*en banc*)). Respondent now appears to endorse this position, at least in part. *See* Resp. Br. at 11 ("Section 101 protects industrial and technological processes, and it excludes methods directed to organizing human activity.").

A "technological contribution" requirement would produce the same result in this case as the previously-discussed tests: Petitioner's claim 1 is not patentable subject matter. His claim includes no particular technological contribution or requirement. While one perhaps *could* conceive of some technological means of hedging risk in commodities trading, that is not what Petitioner claimed. To the contrary, he avoided limiting the process to any technological context, and avoided requiring any particular technology. Implicit (or even explicit) data gathering or post-solution activity using technology, in any event, would not have changed the character of the claimed invention to make it patentable. *See Flook,* 437 U.S. 584; *Comiskey*, 499 F.3d at 1377-78; *In re Grams*, 888 F.2d 835, 839-40 (Fed. Cir. 1989).

CONCLUSION

The judgment of the Court of Appeals for the Federal Circuit should be AFFIRMED.

Respectfully submitted,

SCOTT E. BAIN
COUNSEL OF RECORD
SOFTWARE & INFORMATION
INDUSTRY ASSOCIATION
1090 Vermont Av. Nw,
Suite 600
Washington, DC 20005
(202) 789-4492

Attorney For Amicus Curiae SIIA
October 2, 2009

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Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,
v.
JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF *AMICUS CURIAE* JOHN SUTTON IN SUPPORT OF PETITIONERS

JOHN P. SUTTON, *Pro Se*
Counsel of Record
ATTORNEY AT LAW
123 Race Street
Grass Valley, CA 95945
(530) 477-8538

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QUESTION PRESENTED

Is a business method, such as the method of hedging risk in the Bilski patent application, an unpatentable commercial transaction, or is it a patentable process resulting from the work of an artisan?

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INTRODUCTION

John P. Sutton respectfully submits this amicus brief in support of Petitioners effort to vacate the Federal Circuit judgment, but also to present the proposition that Petitioners' commodity trading is not a "useful art" to be promoted by the grant of a patent as contemplated by the Constitution (Art. 1, Sect. 8, Cl. 8).

INTEREST OF THE *AMICUS CURIAE* [1]

John P. Sutton is a retired patent lawyer, having been a patent examiner, a law clerk at the United States Court of Customs and Patent Appeals, a preparer of patent applications, and a patent trial lawyer during the last half century. His sole interest is in the clarity and consistency of patent law.

SUMMARY OF ARGUMENT

The Bilski method is nothing more than commodity trading in an exchange, part of commerce, as carried out for millennia. It is not the work of an artisan having special knowledge and skill and deserving of a reward for promoting the progress of the useful arts. Congress may enact patent laws to secure rights to inventors under the Constitution. Congress may also "regulate commerce with foreign nations, and among the several states, and with the Indian tribes" under Art. 1, Sect 2, Cl. 2. Commercial transactions have never been considered inventions, "which may include anything under the sun that is made by man"

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[1] Consistent with Rule 37.6, this brief is not authored in whole or in part by contribution to the preparation or submission of this brief. Petitioner has consented to all briefs *amicus curiae*.

(Testimony of Federico, hearings on H.R. 3760, 82d Cong. 1st Sess., 37 (1951), quoted in *Diamond v. Chakrabarty*, 447 U.S. 303, 309, n. 6 (1980). Rather, the cycle up and down of markets for commodities is not the work of artisans promoting the useful arts.

Processes do work. "Art" is the work of an artisan. The work is not confined to the operation of a machine or chemical transformation to a different state or thing. Processes may be the application of a law or principle of nature, but the law or principle is not itself patentable subject matter.

The Court's precedents show that processes are not confined to the narrow examples held to be the "definitive test" by the Court of Appeals. The Court of Appeals has also ignored its own controlling precedent on what constitutes a patentable process.

ARGUMENT

Petitioners, inventors of a "method of managing" risk were denied a patent on their process having three steps: (1) initiating transactions between a commodity provider (a middleman) and a consumer (buyer) of the commodity at a fixed rate based on historical averages; (2) identifying other market participants (sellers) having "a counter-risk position to said consumers" and (3) initiating transactions between the commodity provider (middleman) and "market participants" (sellers) at a second fixed rate in order to "balance the risk" for buyers and sellers. It works this way: one or more middlemen (presumably those authorized to use the process) hedges the risk of price fluctuation for both buyers and sellers by buying the commodity at a price the seller can live with and selling the commodity to a buyer at a price the buyer can live with. The middleman (or middlemen) can profit if the buyer pays more than the seller demands.

Commodity trading has been carried on around the world throughout recorded history. The steps claimed by Petitioners of initiating transactions with consumers of a commodity, identifying sellers of the commodity, and initiating transactions with sellers is not the work of an artisan. According to the Oxford English Dictionary, "art" is a noun derived from Middle English meaning skill as the result of knowledge and practice, specifically, technical or professional skill in humans, as opposed to nature. There is no evidence that commodity trading is a "useful art." Trading has existed since biblical times, seeking to buy low and sell high. Such commerce preceded patents for inventions by millennia, not merely by centuries.

The United States is the only country of the world providing for patent law in the Constitution to encourage the exertions of artisans that resulted in useful arts. The patent clause of the Constitution (Art. 1, Sect. 8, Cl. 8) does not use the word "reward," but this Court made it pellucid that reward was the intent of the patent clause. *Grant v. Raymond,* 6 Pet. (31 U.S.) 218, 242 (1832) states: a patent "is the reward stipulated for the advantages derived by the public for the exertions of the individual, and is intended as a stimulus to those exertions." There must be a contribution by the individual that provides advantages for the public that are worthy of reward.

Manipulating commercial transactions in a marketplace does not provide "advantages derived by the public for the exertions of the individual," and Congress did not intend the patent law to stimulate exertions in "managing consumption risk costs of a commodity," as claimed by Petitioners at 7.

Petitioners argue at pages 29-34 that Congress intended a stimulus to the exertions in manipulating commodity transactions when it enacted 35 U.S.C. Section 273(a)(3) of the patent law. That amendment deals with defenses to patent infringement claims, not with the creation of a reward for exertions that promote progress of the useful arts, as this Court said in *Grant*.

What Petitioners fail to recognize is that patents are rewards for advantages given to society, not to commodity traders. What is the social benefit of "managing the consumption risk costs of a commodity," as in claim 1 (Petitioner's Brief at 7)? It clearly is not an exertion of an individual; not an advantage to the public; and not deserving of a reward. It is inconceivable that applying the claimed formula (Pet. Br. at 8) in pricing commodities promotes progress of the useful arts contemplated by the patent clause of the Constitution.

The word "exertion" used in *Grant v. Raymond* is defined in the Oxford English Dictionary as "3 The action or an act of exerting oneself (physically or mentally)." Chief Justice Holmes was referring in that case to the inventions of individuals that are to be rewarded. The case did not define patentable subject matter, the issue here. Defining patentable subject matter under 35 U.S.C. §101 was the issue in *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 131 (1948), decided more than a century after *Grant*. This Court repeated, as it had previously held, that natural products are not patentable. An invention that is "no more than the discovery of some of the handiwork of nature . . . is not patentable."

The word "handiwork" was used metaphorically there, since nature does not do work by hand. *Funk Bros.* held that selecting "mutually non-inhibitive strains of different species of bacteria of the genus Rhizobium" (claim 4 at 333 U.S. 128, n. 1) is not patentable subject matter. Each of the species of bacteria "infects the same group of leguminous plants which it always infected. No species acquires a different use. The combination of species produces no new bacteria, no change in the six species of bacteria, and no enlargement of the range of their utility. Each species has the same effect it always had. The species perform in their natural way. Their use in combination does not improve in any way their natural functioning. They serve the ends nature originally provided and act quite independently of any effort of the patentee."

The OED defines the word "handiwork" as "2 Work done by hands or by direct personal agency." The word "work" is more apt than "handiwork" in describing patentable subject matter under §101. The OED devotes more than two columns to defining the noun "work" and over three columns defining the verb "work." Relevant here is the noun definition "3 Purposive action involving effort or exertion [Chief Justice Holmes' word in *Grant*], *esp.* as a means of making one's living; (one's) regular occupation or employment. Also, labour, toil; *spec.* (*a*) the operation of making or repairing something, (in *pl.*) architectural or engineering operations."

This definition not only comports with the "exertions" of the artisan in *Grant v. Raymond*, but also distinguishes the artisan's labor from natural work, which is not patentable subject matter according to *Funk Bros.* Managing risk is not the work of a skilled artisan. Patentable subject matter must be compared to the work of persons "having ordinary skill in the art to which said subject matter pertains" (35 U.S.C. §103(a)). Not only that, a patent must describe the invention "in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same" (35 U.S.C. §112, ¶1). It follows that patentable subject matter relates to the skills of artisans, not commodity traders. What is the art "with which [the invention of a method for managing the consumption risk costs of a commodity] most nearly pertains"? Indeed, is "managing the consumption risk costs of a commodity" an art? Amicus submits that it is not the work of a skilled artisan.

The OED definitions of the verb "work" are also instructive. In particular, Definition 3 is "Produce (as) by labour or exertion [that *Grant* word again], make, construct; now usu. *spec.*, make or form (an ornamental object, design, etc.) artistically or skillfully," which combines "exertion" and the skill of the artisan in a manner that is consistent with the patent statute. Managing consumption risk costs of a commodity is not the work of a skilled artisan, nor is it something "under the sun that is made by man" (*Chakrabarty* at 309). "Managing" is not making anything.

The Court of Appeals continues to apply rigid, inflexible rules to patent law, as properly noted by Petitioners. Its judgment must be vacated. However, Congress, in defining defenses to patent infringement claims in Section 273(a)(3), did not amend (or purport to amend), Section 101 to allow patents for commercial transactions like commodity trading. There is a serious question whether Congress has the power to regulate commodity trading outside of commerce among the states, with foreign countries, or with Indian tribes. Congress unquestionably did not find that "managing consumption risk costs of a commodity" promotes the useful arts for the benefit of society.

CONCLUSION

The judgment of the Court of Appeals should be vacated, and the case remanded to determine whether the claimed method is a process deserving of a reward for promoting progress of the useful arts, within the meaning of this Court's precedents.

Respectfully submitted,

JOHN P. SUTTON, *Pro Se*
Counsel of Record
ATTORNEY AT LAW
123 Race Street
Grass Valley, CA 95945
(530) 477-8538

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AMICUS
CURIAE
BRIEF

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No. 08-964

Supreme Court, U.S.
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In The Supreme Court of The United States

BERNARD L. BILSKI AND RAND A. WARSAW,

Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR, PATENT AND TRADEMARK OFFICE,

Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF *AMICUS CURIAE* TELECOMMUNICATION SYSTEMS, INC. IN SUPPORT OF NEITHER PARTY AND FOR PURELY PROSPECTIVE APPLICATION OF ANY ADOPTION OF THE NEW LEGAL TEST APPLIED BELOW

ROBERT P. GREENSPOON
Counsel of Record
WILLIAM W. FLACHSBART
FLACHSBART & GREENSPOON, LLC
53 W. JACKSON BLVD, STE 652
CHICAGO, ILLINOIS 60604

Attorneys for *Amicus Curiae*

TC+TA
COS 4V2PGU

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STATEMENT OF INTEREST OF *AMICUS CURIAE*

TeleCommunication Systems, Inc. (NASDAQ: TSYS) (hereafter, "TCS") is a high technology corporation holding a diverse portfolio of patents and other intellectual property rights.[1] TCS is a leading provider of wireless communication technology. TCS holds 85 patents, most in the United States, with 230 applications pending. Based in Maryland, TCS has almost 650 employees. TCS technologies include, among many others, lifesaving E911 location systems – equipment that allows first responders to pinpoint the location of emergency 911 wireless calls.

Such lifesaving innovations would not have been possible without a predictable, reliable patent system. In order to achieve its growth and commercial success, TCS has relied on a strong United States patent system. Numerous TCS patents have been infringed over the years. In 2009, the Eastern District of Virginia issued judgment for TCS on a jury verdict holding that Sybase 365, another messaging technology company, infringed its U.S. Patent No. 6,985,748 (Civil Action No. 3:06-CV-485 (JRS), now on appeal). The innovations in the '748 patent make it easier for individuals to send SMS text messages to each other. In late 2008 and throughout 2009, TCS began seeking compensation for widespread infringement of two different patents – U.S. Patent Nos. 6,891,811 and 7,355,990. The innovations in the '811 and '990 patents allow wireless subscribers to send text messages to computers on the World Wide Web, and receive automated return messages.

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[1] Under Supreme Court Rule 37.6, we state that no part of this brief was authored by counsel for any party, and no person or entity other than the *amicus curiae* filing this brief made a monetary contribution to the preparation or submission of the brief. The brief is filed with the consent of the parties, and copies of the consent letters have been filed with the Clerk.

TCS has witnessed firsthand the mischief caused by the new patent-eligibility legal standards announced by the Court of Appeals for the Federal Circuit. Though TCS is a technology company and has not sought to patent financial services inventions like the ones invented by Messrs. Bilski and Warsaw, TCS's detractors seek to use the holdings of *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008), to devalue and attack TCS's investment-backed intellectual property rights. For example, TCS recently became a defendant in a civil action an infringer filed to invalidate the widely-infringed '811 and '990 patents (*Newegg Inc. v. TeleCommunication Systems, Inc.*, Civil Action No. CV-09-0982 (JL) (N.D. Cal.)).

In paragraphs 20 and 29 of that Declaratory Judgment Complaint (Dkt. No. 1), the plaintiff alleges that TCS's '811 and '990 patents are invalid as directed to "nonstatutory subject matter under 35 U.S.C. § 101." TCS believes this sort of declaratory judgment count would have been unthinkable against a high technology patent before *Bilski*. At least one other infringer during 2009 cited *Bilski* to lend a pretext to its refusal to pay royalties. Thus, even though TCS's '811 and '990 patents claim innovations related to "gateways" (*i.e.*, "machines" that would clearly pass the *Bilski* "machine or transformation" test), the *Bilski* decision has emboldened copyists to urge expansion of its holdings even further. Though the lower court did not intend to weaken the patent rights of pure technology companies who rely on the patent system to backstop investments in lifesaving technologies, one of its unintended results has been to change the "reality on the ground." *Bilski* has inspired copyists to free-ride on the hard work and investments of others. TCS takes no sides in filing this brief, but simply urges the Court to minimize the damage to the innovation and investment community that might be caused by endorsing the new legal standards wrought below.

SUMMARY OF THE ARGUMENT

This nation's technological leadership relies on a predictable, enforceable patent system. The lower court's *Bilski* decision threatens predictability, because its newly announced limitations on the standards of patent-eligibility under 35 U.S.C. § 101 contradict this Court's holding in *Gottschalk v. Benson*, 409 U.S. 63, 71 (1972). If this Court decides to overrule *Benson* in this regard, it should do so under the framework the Court laid out in *Chevron Oil Co. v. Huson*, 404 U.S. 97, 106-07 (1971) – that is, make any such holding purely prospective.

ARGUMENT

I. INTRODUCTION

In *Bilski*, the Federal Circuit majority applied a new test for process patent eligibility, holding a claimed process must be tied to a particular machine or apparatus, or transform an article into a particular state or thing (the "machine or transformation" test). *In re Bilski*, 545 F.3d 943, 954 (Fed. Cir. 2008). Judge Newman's dissent states that this Court's precedents require a different test: that a claimed process simply must not as a whole embody a law of nature, natural phenomenon, or abstract idea.[2] *Id.* at 977 (Newman, J., dissenting). Necessarily, more inventions are eligible for patent protection under the test Judge Newman gleaned from this Court's precedents. Both the majority and Judge Newman claimed to divine their tests from this Court's interpretations of 35 U.S.C. § 101, codified within the Patent Act of 1952. This Court will now decide which test is correct. This brief does not address that question.

Instead, this brief points out that Judge Newman's views (not that of the majority) have been the prevailing belief within the innovation and investment community since the dawn of the biotechnology and information technology revolution. They have also been the views applied by the United States Patent and Trademark Office (USPTO) in granting millions of patents over the past three decades. The majority's holding – a test requiring a process to embody a machine or transformation – upsets decades-old expectations of what the law is. To borrow Justice Ginsburg's words from a recent decision declining to limit patent rights in another context, the new *Bilski* rules "unfairly discount the expectations of a patentee who had no notice at the time of patent prosecution that such [rules] would apply." *Warner-Jenkinson, Inc. v. Hilton Davis Chem. Co.,* 520 U.S. 17, 41 (1997) (Ginsburg, J., concurring).

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[2] Judge Rader's separate dissent makes similar points. But for simplicity, this brief will refer just to Judge Newman's dissent.

As when it decided *Warner-Jenkinson* (*id.* at 28) and *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722, 739-40 (2002), this Court should again give thoughtful consideration to the effect of the lower court's newly-announced "definitive test" on the reasonable expectations of the innovation and investment community. "Fundamental alterations in these rules risk destroying the legitimate expectations of inventors in their property." *Id.*, 535 U.S. at 739. Here, property rights received under the old patent-eligibility test (the one Judge Newman identified) risk being forfeited and taken without due process of law or just compensation. Limiting any affirmance to prospective application only would quell such concerns.

Affirming *Bilski's* "machine or transformation" test would represent a break from clear past precedent, would conflict with the historical purpose behind the statutory provisions for patent eligibility, and would impose great inequity, injustice and hardship if there were retroactive application. Therefore, if this Court affirms the "machine or transformation" test as the touchstone *vel non* of patent eligibility for processes under 35 U.S.C. § 101, it should apply that holding only prospectively under this Court's *Chevron Oil* framework.[3] In summary, the *Chevron Oil* factors apply for the following reasons:

- Break from Precedent (the first *Chevron Oil* factor): The Federal Circuit made "machine or transformation" the "definitive test" – whereas this Court in *Benson*, 409 U.S. at 71, expressly refused to issue such a holding. *Id.* (stating "We do not hold [this]."). Affirmance of this as the "definitive test" would amount to the Court overruling this aspect of *Benson*.

- Conflict with Historical Purposes (the second *Chevron Oil* factor): Congress indicated the purpose of § 101 of the Patent Act is to make "anything under the sun that is made by man" eligible for patenting, while allowing other sections of the Patent Act to serve the role of determining actual patentability (novelty, inventiveness, descriptiveness, enablement, *etc.*). *Diamond v. Chakrabarty*, 447 U.S. 303, 308-09 (1980) (citing S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H.R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952)). Congress used clear, broad terminology in § 101 to effect this purpose, modifying the statutory language with the comprehensive word "any." *Id.* A holding that effectively qualifies such statutory language by interpreting implicit limitations into it (*e.g.*, the "machine or transformation" test) would counter such purposes.

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[3] *Chevron Oil Co. v. Huson*, 404 U.S. 97, 106-07 (1971).

- **Inequity (the third *Chevron Oil* factor):** Affirmance of "machine or transformation" as the "definitive test" for process patent eligibility would amount to an unprecedented massive government taking of personal property without due process or just compensation. One need look no further than the USPTO's own classification system to realize that "Business Methods" (the category most likely to involve non-machine, non-transformative processes) encompass an entire class of inventions currently examined by the USPTO (Class 705). Scholars and commentators have noted the sea change brought on by this new rule, including its ability to vitiate an entire class of inventions until now believed patent-eligible. *E.g.*, Wayne P. Sobon and Erika H. Arner, "*In re Bilski*: 19th Century Thinking for 21st Century Challenges," Landslide, Volume 1, Number 3, January/February 2009 (published by the ABA Section of Intellectual Property Law).[4]

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[4] Sobon & Arner state in the cited article that to date, more than 15,000 patents have issued in Class 705 (Business Methods). They conclude that *Bilski* "fashioned a rigid, absolute rule for the patentability of processes, a rule better suited for the days of buggy manufacturers and leather dyers than the modern world of information and services," such that it "stunningly and simply ignored the clear will of Congress, a

II. LEGAL STANDARDS

Three factors guide whether a judicial decision should have a purely prospective effect: (1) whether the decision to be applied establishes a new principle of law, (2) whether retroactive application of the decision serves the purpose and effect of the decision, and (3) whether substantially inequitable results would ensue if the decision were applied retroactively. *See Chevron Oil Co. v. Huson*, 404 U.S. 97, 106-07 (1971). This Court in *Harper v. Virginia Dept. of Taxation*, 509 U.S. 86, 97 (1993) abandoned *selective* prospectivity, holding that when it "applies a rule of federal law *to the parties before it*, that rule is the controlling interpretation of federal law and must be given full retroactive effect..." (emphasis added). However, the issue here is whether the *Bilski* holding that "machine of transformation" is the "definitive test" for process patent eligibility should be given *purely* prospective effect. Justice O'Connor noted that "the question of pure prospectivity [was] not implicated by [*Harper*]." *Id.* at 116 (O'Connor, J. dissenting). Thus, even after *Harper*, this Court has not foreclosed applying a decision in a *purely* prospective manner if the *Chevron Oil* factors are present. *See Glazner v. Glazner*, 347 F.3d 1212, 1216-19 (11th Cir. 2003)

Congress that adapted the patent code in response to *State Street Bank* to carefully balance competing policy interests. . . ." They sum up that "*Bilski* is wrongly reasoned, flies in the face of Supreme Court guidance, ignores Congress, throws aside the settled expectations of thousands of patentees, and risks new, serious and unknown economic harm."

(analyzing this Court's precedents to conclude *Chevron Oil* prospectivity remains available, in modified form).

III. THIS COURT NEVER HELD THE "MACHINE OR TRANSFORMATION" TEST TO BE THE "DEFINITIVE TEST" OF PATENT-ELIGIBILITY OF PROCESSES

The first *Chevron Oil* factor is present: that the decision below states a new rule. While it is true that this Court has characterized the "machine or transformation" test as the "clue" to patent eligibility (*Benson*, 409 U.S. at 72, citing *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876)), and has characterized a positive result from that test as militating in favor of patent eligibility (by preceding its mention with the abbreviation "e.g.," as in *Diamond v. Diehr*, 450 U.S. 175, 192 (1981)), this Court has never invalidated patent rights for failure alone to meet the "machine or transformation" test. Quite simply, passing the "machine or transformation" test is a *sufficient* reason to find patent-eligibility, but this Court has never described it as a *necessary* pathway to patent-eligibility.

As Judge Newman's dissent explains, the *Bilski* majority misunderstood *Cochrane* dictum discussing a "process" as an act performed on subject matter, thus mistakenly believing that this Court adopted the "machine or transformation" test in the 19th Century. *Bilski*, 545 F.3d at 984-85 (Newman, J. dissenting). Judge Newman pointed out that this dictum has long been understood not to embody a rule or definition limiting what constitutes a statutory "process." *Id.* Judge Newman also demonstrated that this Court's 20th Century citation of *Cochrane* has always put that earlier decision into its proper perspective, as not embodying an exclusion of non-transformative, non-machine processes. *Id.* at 985, citing ***Parker v. Flook***, 437 U.S. 584, 588 n.9 (1978) and ***Benson***, 409 U.S. at 71.

Judge Newman was right to conclude that nothing in this Court's precedents prepared the innovation and investment communities for the legal regime change wrought by the lower court. While this Court has used the "machine or transformation" test as a "clue" to confirm patent eligibility (as it did with the rubber curing process in ***Diamond v. Diehr***), it has never used such a test to negate it. Indeed, this Court's decision in *Benson* declined invitations to elevate the "machine or transformation" "clue" into the definitive test of patent eligibility for claimed processes. 409 U.S. at 71.

The USPTO's public statements and examination policies have underscored the expectation that the "machine or transformation" test is not the "definitive test" for process patent eligibility. Over 3,300,000 United States patents have issued under these policies.[5]

Since July 1980, with the Third Revision to the Fourth Edition, the Manual of Patent Examining Procedure (MPEP) has guided both the USPTO and inventors on the meaning of the Supreme Court's patent eligibility tests. MPEP § 2105 (4th Ed. 3rd Rev., July 1980). Over nearly thirty years, four editions and thirty-three revisions, the USPTO's long-held understanding of this Court's statements of the correct patent eligibility tests has remained exactly the same. Here we quote the relevant MPEP text, as it has existed continuously in every edition and revision since 1980:

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[5] U.S. Patent No. 4,210,000 issued on July 1, 1980, and U.S. Patent No. 7,510,000 issued on March 31, 2009.

> The tests set forth by the Court are (note especially the italicized portions):
>
> (A) "The laws of nature, physical phenomena and abstract ideas" are not patentable subject matter.
>
> (B) A "nonnaturally occurring manufacture or composition of matter - a product of human ingenuity -having a distinctive name, character, [and] use" is patentable subject matter.
>
> (C) "[A] new mineral discovered in the earth or a new plant found in the wild is not patentable subject matter. Likewise, Einstein could not patent his celebrated $E=mc^2$; nor could Newton have patented the law of gravity. Such discoveries are 'manifestations of... nature, free to all men and reserved exclusively to none.'"
>
> (D) "[T]he production of articles for use from raw materials prepared by giving to these materials *new forms,*

> *qualities, properties, or combinations whether by hand labor or by machinery"* [emphasis added] is a "manufacture" under 35 U.S.C. 101.

MPEP § 2105 (4th Ed. 3rd Rev., July 1980) (identical text through 8th Ed. 7th Rev., July 2008) (all alterations and emphases in original). Note what is missing. None of these tests, which the USPTO gleaned from Supreme Court precedents, required a process to involve a "machine or transformation" to be patent-eligible. Instead, insofar as the recognized tests related to processes, the MPEP states the same standard Judge Newman recognized in her dissent below – exclusion of laws of nature, natural phenomenon and abstract ideas. *Bilski*, 545 F.3d at 977 (Newman, J., dissenting).

Within this period, the MPEP also added new sections (*e.g.*, §§ 2106 and 2110) dealing specifically with patent-eligibility of process inventions that use algorithms or computer programs. Even today, none of these MPEP editions or revisions glean a definitive test from Supreme Court precedent requiring a process to involve a "machine or transformation" to be patent-eligible. The only tests the USPTO recognized from Supreme Court decisions are the ones quoted above – tests that do not include a "machine or transformation" limitation for all processes.

In 2005, after several important Federal Circuit decisions, the USPTO issued Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility. *See* USPTO

Official Gazette Notices 22 November 2005 (available at http://www.uspto.gov/web/offices/com/sol/og/2005/week47/patgupa.htm, last visited June 11, 2009). Even here, the USPTO did not recognize any definitive test requiring processes to involve a "machine or transformation" for a process to be patent-eligible.

The MPEP bears witness to the reasonable expectations of the innovation and investment community. The USPTO analyzed this Court's precedents and formed examination policies, guidelines and manuals for ascertaining patent-eligibility. Having examined and issued over 3.3 million patents in this time period, it never recognized those precedents to require the same test that the *Bilski* majority divines from the same precedents. In effect, the United States has examined patent applications and granted valuable personal property rights under Judge Newman's view of Supreme Court precedent, not that of the *Bilski* majority. Such policies, guidelines and manuals resulted in eligibility for patent protection for processes that involved neither a machine nor a transformation of an article to a different state or thing, as long as those processes did not otherwise seek to claim exclusive rights in inventions that solely embodied laws of nature, natural phenomenon, or abstract ideas. Regardless of its correctness or incorrectness, the holding of the *Bilski* majority embodies different rules from what the USPTO employed in examining the most recent 3.3 million issued patents.

IV. THE NEW TEST CONFLICTS WITH THE HISTORICAL PURPOSES OF § 101 OF THE PATENT ACT

The second *Chevron Oil* factor is present: a break with historical purposes of the rule. Other *amici* have already briefed to this Court why the *Bilski* majority's test conflicts with the purpose and history of the Patent Act of 1952. *See, e.g.*, Brief of *Amicus Curiae* American Intellectual Property Law Association in Support of the Petition for a Writ of *Certiorari* (No. 08-964), at 6-8. In short, (1) Congress placed the broad modifier "any" into the statutory language of 35 U.S.C. § 101, (2) committee reports note that statutory subject matter ought to include "anything under the sun that is made by man," and (3) this Court's precedents have respected these indications of Congressional intent in prior cases, *e.g.*, *Diehr*, 450 U.S. at 182; *Chakrabarty*, 447 U.S. at 309.

V. IT WOULD BE INEQUITABLE TO ALLOW RETROACTIVE APPLICATION OF ANY AFFIRMANCE

Finally, the third *Chevron Oil* factor is present: unfairness in applying the new rule retroactively. In articulating a new "definitive test," the lower court has called into question the validity of thousands (perhaps millions) of issued patents filed and issued before any court ever used the "machine or transformation" criterion as the definitive test of patent-eligibility under § 101. Reliance on the old test would now leave many patentees with worthless patents if *Bilski* is applied retroactively. If the new test were applied retroactively, typical patent claim-drafting practices would leave a patentee with claims that were drawn to patent-eligible subject matter when obtained, but now have retroactively become "non-statutory" as falling outside 35 U.S.C. § 101. The "machine or transformation" test thus would reverse the rules of the game for millions of existing patents. *Cf. Festo*, 535 U.S. at 739 ("Fundamental alterations in these rules risk destroying the legitimate expectations of inventors in their property.").

The patent process is a bargain between the inventor and the Government. The inventor agrees to disclose and specifically claim an invention, both to augment public welfare with an increase in the storehouse of knowledge, and to set forth a definitive demarcation of his or her property rights. In return, the Government grants a patent on the invention for a term of years. *See, e.g., Pfaff v. Wells Electronics,* *Inc.*, 525 U.S. 55, 63 (1998) ("[T]he patent system represents a carefully crafted bargain that encourages both the creation and the public disclosure of new and useful advances in technology, in return for an exclusive monopoly for a limited period of time."). *Bilski* retroactively rewrites the bargain. It changes the rules for inventors after they already invented something useful and practical, disclosed their inventions in reliance on the rules of the day, but drafted process claims that omitted reference to a machine or transformation. An inventor confronting the new rules with the same invention today might re-weigh the options and decide not to seek patent protection, depriving the public of the inventor's enabling disclosure. Thus, *Bilski* destroys the reliance interest of patentees and instead helps copyists who stand ready to capitalize on the sudden availability of technology in the pubic domain that its creators had once thought protected. *Bilski* also re-calibrates the bargain going forward, disincentivizing public disclosure, instead incentivizing the cultivation of trade-secrecy protection.

Changing the rules mid-game would be unfair, and for thousands (maybe more) would amount to a taking without either due process or just compensation. "[A] patent is property, protected against appropriation both by individuals and the government." *Hartford-Empire Co. v. United States*, 323 U.S. 386, 415 (1945); 35 U.S.C. § 261 ("patents shall have the attributes of personal property."). A patentee's rights are "secured, as against the government, by the constitutional guarantee which prohibits the taking of private property for public use without compensation." *Hollister v. Benedict & Burnham Mfg. Co.*, 113 U.S. 59, 67 (1885); *see also William Cramp & Sons Ship & Engine Bldg. Co. v. Int'l Curtis Marine Turbine Co.*, 246 U.S. 28, 39-40 (1918) (patent rights are "protected by the guarantees of the Constitution and not subject therefore to be appropriated even for public use without adequate compensation.").

Affirming the "machine or transformation" test would accomplish a taking no less offensive to the Fifth Amendment, even though effected by judicial decree rather than legislative action. *Webb's Fabulous Pharmacies, Inc. v. Beckwith*, 449 U.S. 155, 164 (1980) ("Neither the Florida legislature by statute, nor the Florida courts by judicial decree, may accomplish [a taking] simply by recharacterizing" private property as public domain); *Hughes v. Washington*, 389 U.S. 290, 298 (1967) (Stewart, J., concurring) ("[T]he Due Process Clause of the Fourteenth Amendment forbids [a state's confiscation of property] no less through its courts than through its legislature."). Justice Stevens has recognized that governmental recall of previously-recognized patent rights would raise serious Fifth Amendment takings concerns:

> It would be manifestly unfair if, after issuing a patent, the Government as a representative of the public sought to modify the bargain by shortening the term of the patent in order to accelerate public access to the invention. The

> fairness considerations that underlie the constitutional protections against *ex post facto* laws and laws impairing the obligation of contracts would presumably disable Congress from making such a retroactive change in the public's bargain with an inventor without providing compensation for the taking.

See Eldred v. Ashcroft, 537 U.S. 186, 226 (2003) (Stevens, J., dissenting). If shortening a patent term would be "manifestly unfair" by retroactively changing the public's bargain with an inventor, then surely eliminating it entirely is only more so. There can be no question that retroactively applying the new "machine or transformation" test would create inequity and unfairness. The innovation economy depends on the government keeping its bargains under the patent system.

CONCLUSION

This Court avoided the Constitutional danger of mid-stream rule changes vitiating previously-valid patent rights in two recent patent cases when presented with arguments to jettison old rules for new. *See Warner-Jenkinson*, 520 U.S. at 28; *Festo*, 535 U.S. at 739-40. Each of those two cases had the potential to limit or eliminate the longstanding doctrine of equivalents infringement test. This Court elected not to impose such limitations. In part, the Court steered away from upsetting legitimate expectations upon which the innovation and investment communities have relied. That remains one option of this Court – *i.e.*, endorse Judge Newman's dissent rather than the majority. However, as argued above, if the Court does impose the new limitations on patent eligibility articulated by the *Bilski* majority, *Amicus Curiae* TeleCommunication Systems, Inc. urges the Court to avoid the thorny Constitutional issues by invoking pure prospectivity of any affirmance under the *Chevron Oil* framework.

Respectfully submitted,

Robert P. Greenspoon
Counsel of Record
William W. Flachsbart
Flachsbart & Greenspoon, LLC
53 W. Jackson Blvd, Ste 652
Chicago, Illinois 60604

Attorneys for *Amicus Curiae*
TeleCommunication Systems, Inc.

AMICUS
CURIAE
BRIEF

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IN THE
Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,

Petitioners,

v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,

Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF TELES AG AS AMICUS CURIAE IN SUPPORT OF NEITHER PARTY

THOMAS S. BIEMER
Counsel of Record
STEVEN I. WALLACH
PHILIP J. FORET
DILWORTH PAXSON LLP
1500 Market Street 3500E
Philadelphia, PA 19102
(215) 575-7000

August 6, 2009

Counsel for Amicus Curiae

COUNSEL PRESS
(800) 274-3321 • (800) 359-6859

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This brief in support of neither party is filed on behalf of amicus curiae TELES AG (TELES). TELES has no financial interest in Petitioners.[1]

INTEREST OF AMICUS CURIAE

TELES, a German high-technology company, is a typical "American" success story. Founded in 1983, and listed on the Prime Standard segment of the Frankfurt Stock Exchange in 1998, TELES conceives and commercializes innovative products and services in the telecommunications and information technology industry. The same entrepreneurial spirit that drives the United States economy has been integral to TELES's success. As a quantifiable example of that success, TELES has paid dividends of over $100,000,000 to its shareholders.

TELES relies on the strength of patent rights awarded in the United States, Europe, and elsewhere to protect its investments in research and development. Consequently, when commercializing a new product or service, TELES concentrates its resources in countries having robust patent systems. TELES therefore has a vested interest in supporting patent systems that properly reward innovation.

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[1] Pursuant to Rule 37.6 of the Rules of the United States Supreme Court, TELES states that no counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than amicus curiae, its members, or its counsel made a monetary contribution to its preparation or submission. The parties have consented to the filing of this brief.

SUMMARY OF ARGUMENT

1. It is clear that the future economic strength of the United States will rely greatly on cutting-edge technologies – such as artificial intelligence, genetic programming, and human-machine communications – that in the broadest sense are not "physical" or "tangible." But the "machine-or-transformation test" set forth by the Federal Circuit gives cause for serious concern that patentability will be statically limited to "physical" or "tangible" implementations of technical developments, largely excluding innovations in such cutting-edge technologies. TELES therefore submits that, to continue to promote the wealth of society by providing meaningful incentives to stimulate innovation, only a dynamic standard for patentable subject matter is consistent with United States patent laws and policy and this Court's precedents.

TELES also recognizes that awarding patents for trivial inventions – i.e., inventions that do not meaningfully push back the frontiers of knowledge – can hinder innovation. TELES thus suggests retaining a test for patentability that ensures that an invention is protectible if it makes a nontrivial contribution in the field of "useful arts" – i.e., the four expansive categories of patentable subject matter identified in Section 101 of the patent statutes.

Several principles are important to companies like TELES when determining where to invest capital. First, robust patent systems are dynamic: they promote innovation across all areas of technology – including those that may not have existed at the Nation's founding or during the Industrial Age – by rewarding inventors with effective patents. Second, robust patent systems apply an inclusive approach to patentable subject matter that avoids limitations based on the "phenotype" of an innovation – i.e., restricting patentability only to inventions that are "physical" or "tangible" types, leaving other types of innovation unpatentable. Third, robust patent systems reward inventors only for their specific contributions over the prior art. According the test for patentable subject matter with those three general principles, by preserving dynamic standards for patentability, will promote the flow of international capital into the United States and further the purpose of the Nation's patent laws.

2. The global nature of patenting strategies recommends that the laws of effective patent systems around the world should be – or should remain – harmonized whenever possible. In today's globalized economy, patenting strategies examine the strengths and weaknesses of patent systems worldwide. To maximize return on investment, international entrepreneurs are attracted to jurisdictions with robust patent systems. For example, both the United States and Europe enjoy well-developed patent systems that have included a dynamic view of patentable subject matter that rewards real innovations in all areas of technology – with no arbitrary, judicially created "carve-outs" from patentability for certain industries or end-uses.

Among the world's robust patent systems, the laws regarding patentable subject matter are already largely harmonized, and this area of patent law in the United

States should remain so. Were this Court to depart from broad, flexible patentability standards, the United States would be at a competitive disadvantage – compared, for example, with Europe – in attracting the international investment that follows effective patent systems. Such a competitive disadvantage would be inconsistent with the policy goals undergirding the United States patent system, further indicating that the Court should retain expansive, dynamic standards of patentability for specific, nontrivial innovations in all technologies.

ARGUMENT

I. TO FURTHER THE PUBLIC POLICY OF THE PATENT LAWS TO PROMOTE INNOVATION, THE STANDARDS FOR PATENTABLE SUBJECT MATTER SHOULD REMAIN DYNAMIC

Robust patent systems are designed to provide wealth to societies by stimulating innovation for all sectors of the economy and all areas of technology. The United States patent system has done this for over two hundred years by rewarding innovations that meaningfully advance public knowledge with effective patents.

A. The Patent Act And This Court's Precedents Recognize That The Purpose Of The Patent System Is To Foster Innovation

The United States Constitution expressly authorizes a patent policy "to promote the Progress of . . . the Useful Arts, by securing for limited Times to . . . Inventors the exclusive right to their . . . Discoveries."[2] Effectuating this general principle, Congress enacted patent statutes that expansively embrace the economic benefits of awarding patents for innovation by providing that "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor . . . ."[3] Tellingly, the statutory language excludes no particular area of the economy and prescribes no static understanding of technology.

Given such Congressionally mandated breadth, when assessing whether an invention presents patentable subject matter, instead of asking "Why?" the proper question is "Why not?"

Consonant with the expansive statutory language, this Court has consistently recognized the dynamic nature of innovation by broadly interpreting the meaning of patentable subject matter under Section 101. In its most recent decisions, in *Chakrabarty* and *Diehr*,[4] the Court upheld a broad standard by expressly refusing to read limitations and conditions into the statute. The legislative intent of Congress, as properly understood and explained by this Court, presents clear support for a dynamic standard for determining patentable subject matter in accord with Thomas Jefferson's philosophical view that "ingenuity should receive liberal encouragement."[5] That philosophy has sagely guided United States patent policy for over two hundred years and has achieved a robust patent system that continues to serve this country well.

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[2] U.S. Const., art. I, § 8, cl. 8.

[3] 35 U.S.C. § 101 (2009); *see also* 35 U.S.C. § 100(b) (2009) (defining "process" capaciously).

[4] *Diamond v. Chakrabarty*, 447 U.S. 303, 308-309 (1980); and *Diamond v. Diehr*, 450 U.S. 175, 192 (1981).

B. Modern Innovation Is Inherently Dynamic, As Should Be The Standards For Patentable Subject Matter

Naturally, the encouragement to innovate that the United States and other patent systems provide cannot apply to inventions excluded from patentable subject matter. Therefore, robust patent systems should reward true innovation in all areas of technology, in all sectors of the economy, and at all levels of maturity, whether long-existing, currently developing, or newly pioneering. Innovation, in turn, is fundamentally a dynamic process. In order to maximally foster innovation, the standard for patentable subject matter must also be dynamic. Thus, to fully realize the constitutional and statutory goals, this Court should ensure that the United States patent system provides its benefits to all areas of the economy and is not frozen in place at any point in time.

In particular, the standard for patentable subject matter should not embrace peculiar industry or end-use exclusions or "carve-outs." Such carve-outs for certain somehow-disfavored technologies or industries would stifle innovation by limiting protection and enforcement of rights in innovation in the carved-out areas, impeding the flow of capital into research and development in those areas. Thus, limiting patentable inventions with such artificial, judicially created exclusions would contradict the constitutional purpose, ignore the unambiguous mandate of Congress found in Sections 100(b) and 101 of the patent statutes, and disregard this Court's precedents.

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[5] *Chakrabarty*, 447 U.S. at 308-309 (*citing* 5 *Writings of Thomas Jefferson* 75-76 (Washington ed. 1871)).

On the other hand, it is well understood that patent grants impede innovation if they cover fundamental principles or trivial inventions – i.e., inventions that do not specifically contribute to and advance the state of the art. Such grants are impermissible under the patent statutes and this Court's precedents, and should be impermissible under the otherwise broad standards for assessing patentable subject matter, which should dynamically embrace all manner of technologies.

TELES generally agrees with the discussion of the law concerning patentable subject matter in Petitioners' merits brief. And while taking no position on the ultimate disposition for Petitioners' patent application in this case, TELES does consider that the patentability of claim 1 is less supportable than the patentability of claim 4.

II. BECAUSE GLOBAL PATENTING STRATEGIES SEEK OUT EFFECTIVE PATENT SYSTEMS WORLDWIDE, DYNAMIC STANDARDS FOR PATENTABILITY BEST PROMOTE INNOVATION IN THE UNITED STATES

International entrepreneurs like TELES weigh the benefits of patent systems throughout the world when considering allocating their resources and the risks and rewards of bringing innovations to market. Consequently, a robust patent system attracts international capital in a manner that aligns precisely with the long-standing goal of the United States patent system to encourage innovation. Further, the global nature of today's economy strongly recommends that the United States patent system be harmonized with robust patent systems of other nations wherever possible. And in the area of patentable subject matter, the laws of jurisdictions with robust patent systems are already largely harmonized around expansive, dynamic standards of patentability.

A. International Entrepreneurs Seek Return On Investment For Innovation In Jurisdictions With Robust Patent Systems

The encouragement to innovate that the patent system provides is made manifest by a patent's grant of a limited period of exclusive rights. These exclusive rights drive the goals of strategic patenting, which are primarily two-fold. First, offensively, patenting strategies obtain protection to help prevent innovation from being copied by competitors in the market, and to provide remedies if copying occurs. Second, defensively, inventors seek to avoid having their technological room to maneuver limited by the patents of others.[6]

International entrepreneurs weigh these two goals heavily when considering global patenting strategies and the protection afforded throughout the world by patent systems in various jurisdictions (primarily nations and regional confederations such as the European Patent Organization). Jurisdictions with robust patent systems, such as the United States and Germany, have historically played a key role in accelerating innovation in global markets and have experienced the creation of wealth that accompanies such innovation.[7] In contrast, jurisdictions having weak patent systems are struggling to attract investment in innovation.[8]

Expanding innovation in international markets relies heavily on effective patents.[9] Effective protection in countries having robust patent systems serves as the basis for disseminating innovation to global partners in other such countries, whether subsidiaries, affiliates, or unaffiliated licensees. Particularly in the computer and telecommunications sectors, patenting technology is critical to protect the innovator from competitors' patent infringement.

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[6] Knut Blind et al., *Motives to Patent: Empirical Evidence from Germany*, 35 Res. Pol'y 655, 656 (2006).

[7] Ashish Arora & Marco Ceccagnoli, *Patent Protection, Complementary Assets, and Firms' Incentives for Technology Licensing*, 52 Mgmt. Sci. 293 (2006).

[8] Sisir Botta & Christopher Tsai, *Globalization is a Catalyst for Change in Intellectual Property Systems: Case Studies in India and China* (2004), *available at* http://net.shams.edu.eg/ecourses/Aeronautics%20and%20Astronautics/under%20&grad/Inventions% 20and%20Patents,%20Fall%202003/pro/1.pdf.

[9] Blind, *Motives to Patent*, *supra* at 665-70.

1. A Developed United States Patent System Supports Investment in Innovation

Though probably self-evident, the notion that no patent system is perfect recently received additional confirmation from two economics professors. They studied the history of patent systems around the world in order, among other things, to illustrate the lesson that

> [t]here are no easy solutions to the problems of running a patent system. There is an inherent trade-off in this system, between rewarding innovators and burdening commerce, competition, and other inventors. Numerous approaches have been attempted over the years, and none has satisfied everyone.[10]

Despite these problems, the approaches that Congress has adopted have, in Lincoln's phrase, "added the fuel of interest to the fire of genius"[11] to produce substantial wealth and other benefits of progress throughout the Nation's history. And since the first Congress exercised its power under the Constitution's patent clause, a dynamic view of patentable subject matter has been a part of a robust United States patent system that has been spectacularly successful in spurring innovation.

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[10] Adam B. Jaffe & Josh Lerner, *Innovation and Its Discontents* 79 (Princeton U. Press 2004).

[11] Abraham Lincoln, Second Lecture on Discoveries and Inventions (Feb. 11, 1859), *in* 3 *The Collected Works of Abraham Lincoln,* at 356-63 (Roy P. Basler ed., Rutgers U. Press 1953).

In its assessment of patentable subject matter in this case, the Federal Circuit adopted a machine-or-transformation test as the sole test for determining whether process inventions are protectible. But this test when applied is very ambiguous. If applied statically, it could be understood to require that patentable inventions show some kind of "physical" or "tangible" element.

A static application of the machine-or-transformation test is possible – indeed likely – because the wording of the test goes back this Court's 1876 decision in *Cochrane v. Deener*,[12] when modern cutting-edge technologies such as artificial intelligence, genetic programming, and human-machine communications were not at all visible on the horizon. Therefore, the wording of this test implicitly reflects the fact that at that time patentable inventions typically had a "physical" or "tangible" phenotype – i.e. patentable inventions were typically tied to a mechanical or electromechanical machine, or to a process, in then-known areas of industry.

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[12] *Cochrane v. Deener*, 94 U.S. 780, 788 (1876).

TELES submits that such (possible) application of the machine-or-transformation test would be totally unacceptable if the United States patent system is to continue encouraging innovation in the future. Such a static test would largely exclude innovations in the cutting-edge technologies of the 21st century and beyond, where frequently technological break-throughs will no longer be tied to any kind of tangible machine or process. Clearly the future economic strength of the United States will rely significantly on such cutting-edge technologies, not "physical" or "tangible" inventions.

Instead of the static machine-or-transformation test, TELES respectfully suggests that this Court take the opportunity of this case to retain the flexible, visionary approach of its precedents on patentability. More particularly, TELES submits that patentability should not depend on the "phenotype" of an invention, but rather on the nature of its contribution to the state of the art. As long as the innovation makes a nontrivial contribution to the field of "useful arts," as authorized in the Constitution and defined by Congress in Sections 100(b) and 101, it should be immaterial which field of human endeavor the invention ultimately benefits.

The proper test would also implement the "long-established principles" that "laws of nature, natural phenomena, and abstract ideas"[13] are excluded from the protection because – if taken alone – they inherently contribute no nontrivial, practical application to the field of useful arts.

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[13] *Diehr*, 450 U.S. at 185.

In addition, an inflexible machine-or-transformation test as the sole standard for determining patentable subject matter has repeatedly been rejected by this Court. In *Benson*, the Court duly noted the language of *Cochrane* concerning transforming an article to a different state or thing, and other older cases.[14] But the Court went on to explain that its prior precedents did not set out exclusive requirements for deeming a process patentable:

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a "different state or thing." We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.[15]

Recognizing that *Cochrane* and other early decisions pertained to mechanical inventions conceived in a bygone era, the Court made clear that it was using a dynamic standard: "It is said we freeze process patents to old technologies, leaving no room for the revelations of the new, onrushing technology. Such is not our purpose."[16]

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[14] *See Gottschalk v. Benson*, 409 U.S. 63, 68-71 (1972) (*citing Waxham v. Smith*, 294 U.S. 20, 22 (1935); *Smith v. Snow*, 294 U. S. 1 (1935); *Expanded Metal Co. v. Bradford*, 214 U.S. 366, 385-86 (1909); *The Telephone Cases*, 126 U.S. 1, 534, 535, 538 (1887); *Tilghman v. Proctor*, 102 U. S. 707, 721 (1881); *Cochrane v. Deener*, 94 U.S. 780, 785, 787-88 (1876); *O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 111, 112, 113 (1854)).

[15] *Benson*, 409 U.S. at 71

[16] *Id.*

Consistent with *Benson*, in *Flook* this Court again explicitly rejected the argument that patentable processes should be limited to those meeting static tests used in earlier decisions:

> The statutory definition of "process" is broad. An argument can be made, however, that this Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a "different state or thing." As in *Benson*, we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents.[17]

The problem with the claimed invention in *Flook*, as the Court later explained in *Diehr*, was not lack of any machine or transformation, but lack of any specific contribution over the prior art apart from an unpatentable algorithm:

> The [Flook] application, however, did not purport to explain how these other variables were to be determined, nor did it purport "to contain any disclosure relating to the chemical processes at work, the monitoring of the process variables, nor the means of setting off an alarm or adjusting an alarm system. All

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[17] *Parker v. Flook*, 437 U.S. 584, 589 n.9 (1978) (*quoting Cochrane*, 94 U.S. at 787).

> that it provides is a formula for computing an updated alarm limit."[18]

Also in *Diehr*, this Court characterized the decisions in *Benson* and *Flook* not as setting forth a single, inflexible standard, but rather as modern applications of the "long-established principles" that "[e]xcluded from . . . patent protection are laws of nature, natural phenomena, and abstract ideas."[19] And consistent with its prior cases, the Court in *Diehr* identified transformation as just one example of patent-protectible functions:

> [W]hen a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (*e.g.*, transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of §101.[20]

Although some observers consider this Court's precedents concerning patentable subject matter to be irreconcilable, they all stand for one or both of two propositions. First, trivial inventions that do not specifically advance publicly available knowledge are not patentable. Second, the standards for patenting processes should be broadly applied and dynamically considered, limited only by the three exclusions for patentable subject matter: laws of nature, natural phenomena, and abstract ideas.

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[18] *Diehr*, 450 U.S. at 186-87 (*quoting Flook*, 437 U.S. at 586); *see also Chakrabarty*, 447 U.S. at 315 (iterating that the Court's precedents were consistent with Section 101's "[b]road general language" and explaining that "*Flook* did not announce a new principle that inventions in areas not contemplated by Congress when the patent laws were enacted are unpatentable per se.").

[19] *Diehr*, 450 U.S. at 185.

[20] *Id.* at 192.

2. A Developed European Patent System Supports Investment In Innovation[21]

In Europe, the most important source of patent law is the European Patent Convention,[22] which in 1973 established the European Patent Organization. The now-35-member European Patent Organization (including all EU countries) operates the European Patent Office (EPO), which the EPC authorizes to grant patents on behalf of all member states.

Article 52 of the EPC broadly defines patentable subject matter:

> European patents shall be granted for any inventions, in all fields of technology, provided that they are new, involve an inventive step and are susceptible of industrial application.[23]

---

[21] TELES gratefully acknowledges the contributions to this section of Dr. Ralph Nack of Bird & Bird LLP, Munich.

[22] Convention on the Grant of European Patents of 5 October 1973, as revised by the Act revising Article 63 EPC of 17 December 1991 and the Act revising the EPC of 29 November 2001, art. 52, *available at* http://www.epo.org/about-us/publications/procedure/epc-2000.html [hereinafter EPC].

[23] Art. 52 ¶ 1 EPC

Article 52 of the EPC also lists certain inventions – including "programs for computers" – that if claimed "as such" are not regarded as inventions in a field of technology.[24] But given several decisions by the EPO technical boards of appeal (including those discussed below), in practice this list of exclusions from patentability is essentially meaningless.

Significantly, it is widely accepted that under the EPC patentability is not limited to a specific "phenotype" of innovations. In particular, a "machine-or-transformation test" suggesting a limitation to "physical" or "tangible" inventions is completely alien to European patent-law doctrines.

For example, since a 2000 decision of an EPO board of appeal – known familiarly as the Pension Benefits case – it is settled caselaw of the EPO and the courts of the EPC member states that patentability will be examined by applying a two-step test: First, under Article 52 of the EPC, the invention must be examined to determine whether it is – if considered as a whole – an invention in a field of technology. Second, under Article 56 of the EPC, the invention must be assessed to determine whether it makes a nonobvious contribution (i.e., "involve[s] an inventive step") to the state of the art in a field of technology, or whether its contribution to the art is in a field of human endeavour not considered to be technology.[25]

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[24] Art. 52 ¶¶ 2-3 EPC.

[25] *See* Art. 56 EPC; *see also* Case T 931/95, Controlling pension benefits system/PBS Partnership, O.J. E.P.O. 2001, 441 (2000) [hereinafter Pension Benefits].

The first requirement is fulfilled if the claimed subject matter contains technical elements – i.e., is somehow linked to a field of technology. It is important to note, as did the EPO board in the Pension Benefits case, that it is immaterial whether or not the "technical elements" of the claimed invention are new or even inventive:

> There is no basis in the EPC for distinguishing between "new features" of an invention and features of that invention which are known from the prior art when examining whether the invention concerned may be considered to be an invention within the meaning of Article 52(1) EPC. Thus there is no basis in the EPC for applying this so-called contribution approach for this purpose.[26]

That a patentable invention may combine technical and nontechnical elements was confirmed in a 2002 EPO board decision:

> It is legitimate to have a mix of technical and "non-technical" features (i.e. features relating to non-inventions within the meaning of Article 52(2) EPC) appearing in a claim, even if the non-technical features should form a dominating part.[27]

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[26] T 931/95, Pension Benefits.

[27] Case T 641/00, Two identities/Comvik, O.J. E.P.O. 2003, 352 (2002); *see also* Case T 258/03, Auction method/Hitachi, O.J. E.P.O. 2004, 575 (2004); Case T 172/03, Order management/Ricoh, O.J. E.P.O. __, __ (2003), *available at* http://www.epo.org/patents/appeals/search-decisions.html (search T_0172/03).

But the fundamental doctrine underlying this two-part test existed in European patent law from the very beginning, even before the test was formally introduced into EPO caselaw. For example, the fundamental doctrine was discussed in a 1986 EPO board of appeal decision:

> Generally speaking, an invention which would be patentable in accordance with conventional patentability criteria should not be excluded from protection by the mere fact that for its implementation modern technical means in the form of a computer program are used. Decisive is what technical contribution the invention as defined in the claim when considered as a whole makes to the known art.[28]

With respect to computer programs, the EPO examination guidelines describe this fundamental doctrine as providing a "technical effect":

> [I]f a computer program is capable of bringing about, when running on a computer, *a further technical effect going beyond these normal physical effects*, it is not excluded from patentability. *This further technical effect may be known in the prior art.* A further technical effect which lends technical character to a computer program may be

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[28] Case T 208/84, Computer-related invention/Vicom, O.J. E.P.O. 1987, 014 (1986); *see also* Case T 6/83, Data processor network/IBM, O.J. E.P.O. 1985, 67 (1988); Case T 1002/92, Queueing system/Pettersson, O.J. E.P.O. 1995, 605 (1994).

> found e.g. in the control of an industrial process or in processing data which represent physical entities or in the internal functioning of the computer itself or its interfaces under the influence of the program and could, for example, affect the efficiency or security of a process, the management of computer resources required or the rate of data transfer in a communication link. As a consequence, a computer program may be considered as an invention within the meaning of Art. 52(1) if the program has the potential to bring about, when running on a computer, a further technical effect which goes beyond the normal physical interactions between the program and the computer.[29]

It is important to note that, according to the EPO examination guidelines, any kind of computer-related invention passes the test of Article 52 of the EPC as long as "technical elements" such as display units, servers, or networks are mentioned in the patent claim.

The second step of the patentability test is illustrated in the Pension Benefits EPO board decision, where an improved algorithm for administrating a pension fund was deemed unpatentable:

> Indeed, the improvement envisaged by the invention according to the application is an

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[29] European Patent Office, *Guidelines for Examination in the European Patent Office* C-IV, 2.3.6 (2009) (emphasis added), *available at* http://www.epo.org/about-us/publications/procedure/guidelines-2009.html [hereinafter *Guidelines*].

> essentially economic one, i.e. lies in the field of economy, which, therefore, cannot contribute to inventive step.[30]

In sum, despite the sometimes-restrictive effect of the two-step patentability test, under the EPC patentable subject matter is clearly not limited to a specific "phenotype" of innovations. Limitations to "physical" or "tangible" inventions are completely alien to European patent-law doctrines.

B. Harmonizing Patent Systems Supports Investment In Innovation

As the discussion above demonstrates, the standards for patentability in the United States and Europe are largely harmonized. Both jurisdictions' patent laws include expansive, dynamic views of patentable subject matter for nontrivial inventions. In both patent systems, the concept of patentability avoids any limitations to a specific "phenotype" of innovations, and eschews any carve-outs for particular industries or end-uses.

TELES submits that this Court should confirm that the test for patentability in the United States does not impose restrictions that are alien to other very successful patent systems in the world. It is in the interest of any nation not to deviate from globally accepted principles of patent law, but imposing such restrictions would do just that, producing a negative impact on investments made by international companies in that nation. The flow of capital follows robust patent systems, such as the United States patent system, that feature broad, dynamic views of patentable subject matter.

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[30] T 931/95, Pension Benefits.

In contrast, underdeveloped patent systems pose substantial risk for investment in innovation, effectively turning it away. These patent systems present uncertain outcomes for obtaining and enforcing effective patents and consequently deter capital expenditure in research and development and international market expansion.

For years, international entrepreneurs shied away from investing in innovation in China, India, and other countries marred with a public perception of having weak patent systems.[31] The uncertainties of whether a patent would be awarded for innovation and whether a patent would be enforceable removed countries with weak patent systems from consideration for global market expansion until recent years.[32] Because economic progress relates to technological progress, and because effective patents are strong drivers of both these forms of progress, countries with weak patent systems enjoy less economic and technological progress than do countries with robust patent systems.

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[31] Botta & Tsai, *Globalization is a Catalyst for Change in Intellectual Property Systems*, *supra* at 1; Eric S. Langer, *China Today: Intellectual Property Protection in China: Does it Warrant Worry?*, (2007), *available at* http://biopharminternational.findpharma.com/biopharm/article/articleDetail.jsp?id=423187.

[32] Arora & Ceccagnoli, *Patent Protection, Complementary Assets, and Firms' Incentives for Technology Licensing*, *supra* at 296; John W. Sutherlin, *Intellectual Property Rights: The West, India, and China*, 8 PGDT 399, 410 (2009).

For example, recognizing the importance of effective patents, China made a first major overhaul of its patent system in the 1980s and since then has sought continuous reforms to make that country an attractive option for global patenting strategies.[33] In order to change public perceptions of having a weak patent system, China joined key international patent agreements, including the Paris Convention and the Patent Cooperation Treaty, among others. As a World Trade Organization (WTO) member, China has developed its patent system to be in line with the requirements for compliance the WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).[34] This has helped turn the tide of negative public perception of China's intellectual-property laws.[35] Part of China's recent and substantial economic growth is attributed to its attempts to create a stronger patent system and effective processes for enforcing rights, which have begun to change public perceptions and help China evolve into a strong presence in the global economy.[36]

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[33] Lulin Gao, *China's Patent System and Globalization*, 51(6) Research-Technology Management 34 (2008); Du Guodong, *Introduction of China's Intellectual Property System*, (2008), *available at* http://English.gov.cn/2008-06/14/content_1016453.htm.

[34] Gao, *China's Patent System and Globalization*, *supra* at 35.

[35] Botta & Tsai, *Globalization is a Catalyst for Change in Intellectual Property Systems*, *supra* at 12; Guodong, *Introduction of China's Intellectual Property System*, *supra*.

[36] Langer, *China Today: Intellectual Property Protection in China: Does it Warrant Worry?*, *supra*; Sutherlin, *Intellectual Property Rights: The West, India, and China*, *supra* at 410.

In contrast, India's patent system is still widely regarded as seriously flawed. India's patent system has a poor infrastructure and slow processes for enforcing patent rights.[37] These perceptions negatively impact India's economy, with relatively ineffective patent protection offering little incentive for investing in research and development.

Just as poor infrastructure and ineffective enforcement mechanisms are hallmarks of weak patent systems, an inflexible machine-or-transformation test as the sole test for the patentability of processes would weaken the Nation's patent system, and concomitantly lessen the incentives for inventing in this country. Confirming that the standards of patentability are broad and dynamic, remaining harmonized with robust patent regimes such as Europe's, will maintain the effectiveness of patents in the United States. And although the United States patent system, like all others, has its problems, a broad and dynamic view of patentable subject matter is not one of them.

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[37] Botta & Tsai, *Globalization is a Catalyst for Change in Intellectual Property Systems*, *supra* at 2-3.

CONCLUSION

Innovation is dynamic; encouraging innovation therefore requires that the standards for patentable subject matter also be dynamic. And the patent system's incentives to innovate apply only as broadly as the scope of patentable subject matter. The Federal Circuit's machine-or-transformation test gives cause for serious concern that patentability will be limited to "physical" or "tangible" implementations ("phenotypes") of technical developments, largely excluding innovations in current and future cutting-edge technologies. To further the constitutional and statutory goals of the patent system, TELES respectfully suggests that this Court retain an expansive, flexible test for patentability that ensures that an invention is patentable if it makes a specific, nontrivial contribution in the field of "useful arts" – i.e., the four broad categories of patentable subject matter identified in the patent statutes.

Respectfully submitted,

THOMAS S. BIEMER
Counsel of Record
STEVEN I. WALLACH
PHILIP J. FORET
DILWORTH PAXSON LLP
1500 Market Street 3500E
Philadelphia, PA 19102
(215) 575-7000

Counsel for Amicus Curiae

August 6, 2009

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CURIAE
BRIEF

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Supreme Court of the United States

BERNARD L. BILSKI and RAND A. WARSAW,
Petitioners,
v.
JOHN DOLL, Acting Under Secretary of Commerce
for Intellectual Property and Acting Director,
Patent and Trademark Office,
Respondent.

ON WRIT OF CERTIORARI TO THE
UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF AMICI CURIAE OF 20 LAW AND BUSINESS PROFESSORS IN SUPPORT OF NEITHER PARTY

MICHAEL RISCH
WEST VIRGINIA UNIVERSITY
COLLEGE OF LAW
P.O. Box 6130
Morgantown, WV 26506

R. POLK WAGNER
UNIVERSITY OF PENNSYLVANIA
LAW SCHOOL
3400 Chestnut Street
Philadelphia, PA 19104

MARK A. LEMLEY
Counsel of Record
STANFORD LAW SCHOOL
559 Nathan Abbott Way
Stanford, CA 94305
(650) 723-4605

TED SICHELMAN
UNIVERSITY OF SAN DIEGO
LAW SCHOOL
5998 Alcalá Park
San Diego, CA 92110

Attorneys for Amici Curiae

224361

COUNSEL PRESS
(800) 274-3321 • (800) 359-6859

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STATEMENT OF INTEREST OF AMICUS CURIAE

Amici are professors who teach and write about patent law at law and business schools throughout the United States and Canada. A complete list of signatories is attached as Appendix A. We are interested in seeing that patent law develops in a way that continues to encourage innovation in all fields of endeavor.[1]

SUMMARY OF ARGUMENT

Both the language of Section 101 of the Patent Act and the legislative history surrounding its enactment are expansive, permitting patent protection for "anything under the sun that is made by man." 35 U.S.C. § 101 ("Whoever invents or discovers *any* new and useful process… or *any* new and useful improvement thereof . . . .") (emphasis added); *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (quoting S. Rep. No. 1979, 82nd Cong., 2nd Sess. 5 (1952); H.R. Rep. No. 1923, 82nd Cong., 2nd Sess. 6 (1952)). That expansive scope reflects a wise policy judgment not to discourage innovation in new and unforeseen areas of technology by imposing arbitrary, inflexible limits on the scope of patent protection. Since this Court last addressed the scope of patentable subject matter nearly three decades ago, technology has changed in unforeseeable ways. Indeed, novelty is an essential requirement to receive a patent. *Cf. KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007) (unpredictability is important in obvious analysis). A rule that freezes the definition of patentable subject matter in time will hobble new areas of innovation.

---

[1] *Amici* have no financial interest in the outcome of this case. No counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than *amici* made a monetary contribution to its preparation or submission. The parties have consented to the filing of this brief.

Unfortunately, the Federal Circuit created just such a static rule via its so-called "machine or transformation" test. It purported to draw from this Court's precedent a detailed series of requirements for patentability, but it missed the forest for the trees. This Court's precedents do not stand for the proposition that only certain classes of traditional technologies are eligible for patent protection. Instead, they reflect a broad, flexible approach to patentable subject matter, limited only by traditional exceptions for abstract ideas, natural phenomena, and laws of nature.

This flexible approach, tempered by a stable set of exceptions, is sound policy. The Federal Circuit in this case imposed new—and as we show below, essentially arbitrary—limits on the patentability of particular types of inventions. This turn by the Federal Circuit interferes with the core purposes of the patent laws in two important ways.

First, new and nonobvious processes do not arise only in fields of endeavor denominated "technological." Nor do they always involve the "physical transformation" of matter or reside in a specific type of "machine." If patent law is to play its fundamental role in spurring invention, then patentable subject matter must include any sort of new and nonobvious invention, however it is embodied, subject only to the limitations designed to prevent the patenting of abstract ideas, laws of nature, and natural phenomena.

Second, even when the embodiment of an invention transforms matter or resides in a machine, the new and nonobvious contribution often resides in the inventor's insight that an existing transformation or machine could have an unexpected property. Limiting patent protection to physical transformations and specific machines would have problematic consequences for a variety of industries, including not only software but also pharmaceuticals and biotechnology. In these research-intensive industries, invention often consists not merely of making a new thing, but of harnessing a scientific principle or fact about the world to a new and useful end. New and nonobvious insights into which molecular structure might cure cancer, what ratio of measured chemicals in the human body indicates disease, and which form of an algorithm will properly measure the risk inherent in a debt instrument, should be patentable so long as they involve the practical application of the idea or discovery. By contrast, the scientific principle or fact itself should not be patentable, because it is merely an abstract idea, law of nature, or natural phenomenon.

We recognize there are legitimate concerns that certain business method and software patents, even those tied to a practical application, can present problems for society by walling off fundamental principles from other researchers and engineers. But the solution to the problem of bad patents in the software and business method fields (as in any area of innovation) is not the creation of new dogmatic rules against patentability, but the application of traditional doctrines, coupled with the reform of other doctrines that encourage litigation abuse. Recent decisions, including *KSR*, *eBay*, and *Seagate*, give the courts many of the tools they need to both weed out bad patents and limit the use of patents to hold up an industry. Indeed, one of the lessons of prior attempts to restrict subject matter was that the primary effect was not to prevent the patenting of software, but—in response to patent attorneys' creative efforts to draft around these essentially arbitrary limitations—to make it more difficult for the Patent & Trademark Office ("Patent Office") and courts to identify and weed out questionable patents.

This Court should reaffirm its precedent allowing the patentability of "anything under the sun that is made by man," subject to the well-established exceptions incorporated by the abstract idea, law of nature, and natural phenomenon doctrines. Where an idea is claimed *as applied*, it is eligible for patentability, but if it is claimed merely *in the abstract* it is not.

This test provides ample basis to weed out those patents that attempt to mark not a practical application, but instead a fundamental principle, such as the patent at issue in this case. Bilski and Warsaw claim a broad principle of doing business, without tying it to any specific application. For this reason, their claims are merely "abstract ideas" and should be unpatentable. But this Court should take care not to sweep away protection for true innovations in an effort to prevent the grant of a patent in this case.

ARGUMENT

I. The Statute and this Court's Precedents Properly Establish a Flexible, Technology-Neutral Approach to Patentable Subject Matter

A. The Patent Act and Precedent Establish that Patentable Subject Matter Accommodates the Emergence of New Technologies

We begin with the simple observation that Congress intended patentable subject matter to be broad. The statute provides protection for "*any* new and useful process, machine, manufacture, or composition of matter." 35 U.S.C. § 101 (emphasis added). The statutory definition of the term "process" has a wide sweep: "the term 'process' means process, art, or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material." [2] 35 U.S.C. § 100(b). The ordinary meaning of "process"—a series of definite steps taken to achieve some end[3]—is quite general as well. Further, the term "process" was written into the statute as a substitute for the term "art." *See Diamond v. Diehr*, 450 U.S. 175, 182-84 (1981)

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[2] The Federal Circuit expressly disregards this statutory definition in a footnote with virtually no analysis. *In re Bilski*, 545 F.3d 943, 951 n.3 (Fed. Cir. 2008). Of course, consideration of the term "process" must necessarily begin with the statute. *Randall v. Loftsgaarden*, 478 U.S. 647, 656 (1986) ("Here, as in other contexts, the starting point in construing a statute is the language of the statute itself.").

[3] *See* Random House Dictionary (2009) and American Heritage Dictionary (4th ed. 2009), *available at* http://dictionary.reference.com/search?q=process.

("In the language of the patent law, [a process] is an art"). In turn, "art," as used in this context, was historically considered anything that did not fit into one of the other categories, another very broad definition.[4] *Jacobs v. Baker*, 74 U.S. 295, 298 (1868).

We acknowledge that an overly narrow reading of some early case law might well limit processes to physical transformations. *See, e.g.*, *Cochrane v. Deener*, 94 U.S. 780, 788 (1877) ("A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing."). But a non-physical process was not before the Court in *Cochrane*, which affirmed patentability of a physically transformative method.[5] 94 U.S. at 791. As such, the discussion in *Cochrane* should not be read as limiting "processes" to physical transformations, but instead as an example of a type of process that is patentable.

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[4] *Jacobs* also implies that "useful arts," a separate, but related, requirement of Section 101, are not limited to "technological arts," further confirming the statute's breadth. *Id.*; *see also Corning v. Burden*, 56 U.S. 252, 267 (1854) (finding that "useful art" is a general term); *Baker v. Selden*, 101 U.S. 99, 102 (1879) (ruling that copyright cannot protect bookkeeping forms because bookkeeping is a "useful art").

[5] *See also In re Schrader*, 22 F.3d 290, 295 n.12 ("subject matter" in *Cochrane* was not limited to physical transformation, and transformation of "intangibles" is also statutory subject matter, or else the method used by the telephone would not have been patentable).

This Court's modern precedent has continued to recognize a flexible definition of patentable subject matter. In 1980, it recognized that the statute is expansive, permitting patent protection for "anything under the sun that is made by man." *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (quoting S. Rep. No. 1979, 82nd Cong., 2nd Sess. 5 (1952); H.R. Rep. No. 1923, 82nd Cong., 2nd Sess. 6 (1952)).

A year later, the Court refused to limit the scope of protectable patents to the kinds of processes that existed in the 19th century. As explained in *Diamond v. Chakrabarty*, "[a] rule that unanticipated inventions are without protection would conflict with the core concept of the patent law that anticipation undermines patentability." 447 U.S. at 316.

Finally, as important as what the Court *has* done with respect to interpreting patent eligibility is what it *has not* done. The Court has been careful to recognize the need for flexibility even as it has denied patentability to abstract mathematical algorithms; thus, it did so based on grounds other than a narrow interpretation of "process" or a focus on the form of the technology involved. For example, in *Gottschalk v. Benson* the Court rejected a form of the rigid "machine-or-transformation" test imposed by the Federal Circuit here:

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing.' We do not hold that no process patent could ever

> qualify if it did not meet the requirements of our prior precedents.

409 U.S. 63, 71 (1972). Six years later, in *Parker v. Flook*, the Court was even more explicit, making clear that a "physical transformation" was not a limitation:

> The statutory definition of 'process' is broad. [] An argument can be made, however, that this Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a 'different state or thing' . . . . *we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents.*

437 U.S. 584, 589 (1978) (emphasis supplied).

Both the statute and this Court's interpretation reflect an unbroken chain of broad, flexible patent eligibility.

B. The Court's Limitations on Patentable Subject Matter Distinguish Between Applied and Abstract Inventions

Nonetheless, patentable subject matter is not unlimited. *See, e.g.*, *Diamond v. Diehr*, 450 U.S. 173, 185; *see also Parker v. Flook*, 437 U.S. 584 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972); *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948).

Yet, when limiting eligibility, this Court has not focused on the technology, form, or "physicality" of the claimed invention—the critical mistake made by the Federal Circuit in the instant case. Rather, the Court has uniformly recognized that the key to eligible subject matter is ascertaining whether an idea is claimed *as applied*—in which case it is eligible for patentability (assuming it is not a natural phenomenon or product of nature[6])—or merely *in the abstract*—in which case it is not.

In establishing this applied/abstract distinction, the Court has not resorted to quixotic attempts to categorize types of technology or discern the transformative properties of inventions, but has instead harmonized Section 101 with the long-standing requirement that a patent claim must "enable" a person of ordinary skill in the art to make and use the claimed invention. Indeed, the subject matter and enablement requirements were formerly part of the same statutory section. Patent Act of 1836, Ch. 357, 5 Stat. 117, § 6 (July 4, 1836).

This Court's applied/abstract doctrine is more than 150 years old, emerging in *Morse*. There, the Court invalidated a claim to all communication by electrical signal as "abstract," but allowed a claim to the *application* of the communications method to stand. *O'Reilly v. Morse*, 56 U.S. 62, 112-21 (1854). Importantly, in *Morse*, it was clear that the inventor's attempt to claim an idea (communication by electrical signals) in the abstract was prohibited in large measure because he could not adequately describe its boundaries. *See id.*, at 112-21 ("In fine he claims an exclusive right to use a manner and process which he has not described and indeed had not invented, and therefore could not describe when he obtained his patent.").

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[6] *See Chakrabarty*, 447 U.S. at 309-310.

Conversely, where Morse did describe and claim practical applications of the same idea—for example a "system of signs, consisting of dots and spaces, and of dots, spaces, and horizontal lines, for numerâls, letters, words, or sentences, substantially as herein set forth and illustrated, for telegraphic purposes" —the Court viewed it as clearly patentable. *Id.* at 121. That is, where Morse narrowed his claim to a specific application of the idea of electronic communication, matching the scope of his disclosure, the invention was eligible for patentability.

Importantly for present purposes, we note the Morse's valid "system of signs" claim is not significantly different from many of the applied software and other processes claimed by today's inventors. That claim is neither "tied to a particular machine" nor transforms anything other than data, so it would fail the Federal Circuit's *Bilski* test. Nonetheless, the *Morse* Court held it patentable.[7]

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[7] The claim in *Morse* is not alone. In addition to the life insurance plans, lottery-prize distribution, and railway-ticket checking patents discussed in Judge Newman's dissent below, 545 F.3d at 989, patents covering applied—but non-transformative—processes have traditionally been patentable. One example is Patent No. 1700, Improvement in the Mathematical Operation of Drawing Lottery (July 18, 1840), which claims a method for the random selection of lottery tickets.

The applied/abstract distinction continued to play a key role in *Mackay Radio & Tel. Co. v. Radio Corp. of Am.*, 306 U.S. 86 (1939). There, a well-known mathematical principle regarding the reception of radio waves was directly implemented into the patented antenna. *Id.* at 92-3. The Court recognized that "the use of the formula in practice presupposes the use of a wire whose length is a multiple of half wave lengths" and that the "formula expressed a scientific truth." Despite the direct and simple use of the formula, the Court upheld the antenna as patentable subject matter: "While a scientific truth, or the mathematical expression of it, is not patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be." *Id.* at 94

This applied/abstract distinction was also central to *Gottschalk v. Benson*, 409 U.S. 63 (1972), where the Court considered a patent directed to the mathematical conversion of "binary coded decimals" into pure binary format, a conversion that was known and could be done by pencil and paper. *Id.* at 66-67. While *Benson* is often cited for the notion that "pure mathematical algorithms" are unpatentable subject matter, the Court was in fact more concerned with the inventor's inability to describe the process in such a way that it was clear that the applicant actually invented the claimed invention:

> Here the 'process' claim is so abstract and sweeping as to cover both known and unknown uses of the BCD to pure binary conversion. The end use may (1) vary from the operation

> of a train to verification of drivers' licenses to researching the law books for precedents and (2) be performed through any existing machinery or future-devised machinery or without any apparatus.

Id. at 68; *see also id. at* at 69-70 (discussing other cases in terms of definiteness). Again, the Court ruled that applied principles are patentable, but abstractions are not.

In its most recent treatment of Section 101, the Court brought the same applied/abstract approach to bear in upholding the claims in *Diamond v. Diehr*, 450 U.S. 175 (1981): "The respondents' claims were not directed to a mathematical algorithm or an improved method of calculation but rather recited an improved process for molding rubber articles *by solving a practical problem* which had arisen in the molding of rubber products." *Id.* at 181 (emphasis added). The Court noted, after surveying precedents, that:

> It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection. . . . Arrhenius' equation is not patentable in isolation, but when a process for curing rubber is devised which incorporates in it a more efficient solution of the equation, that process is at the least not barred at the threshold by §101.

Id. at 187-88 (emphasis in original).

We also think that the essence of this Court's applied/abstract doctrine can be seen in Section 101's prohibition against patenting products of nature. Here, the Court has repeatedly emphasized that the patent law is designed to protect applications of human ingenuity, not simply "nature's handiwork." *See Chakrabarty*, 447 U.S., at 310; *see also Funk Brothers Seed*, 333 U.S., at 131. Thus, while a man-made organism is eligible for patentability, *see Chakrabarty*, 447 U.S., at 310, a natural bacterium is not, *see Funk Brothers*, 333 U.S., at 131. The boundary is neither the form of the invention nor its ability to "transform" nature; instead the analysis turns on whether the patent claims describe the application of human knowledge to a practical end, rather than merely identification of the existence of useful properties. In this way, a claim to an abstract idea is like a claim to a product of nature: unmoored to real-world applications of human inventiveness, and thus ineligible for patenting. "A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right." *Le Roy v. Tatham*, 14 How. 156, 175 (1853); *see also Diehr*, 450 U.S. 185 (quoting *Le Roy*), *Chakrabarty*, 447 U.S., at 309.

Finally, we note that the applied/abstract doctrine usefully harmonizes Section 101's analysis for patentable subject matter with Section 112's requirement that patentable inventions be "enabled"—that is, contain a "written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same . . . ." 35 U.S.C. § 112. Much like Section 101, Section 112 safeguards the essential function of the patent system: the dissemination of real-world, practical human knowledge. Claims to abstract mathematical concepts (like claims to natural products or physical phenomena) violate this tenet, by failing to demonstrate that the inventor is adding to the storehouse of useful, practical human accomplishment.

In short, this Court's precedents properly establish the appropriate test for whether claims fall within the patentable subject matter requirement of Section 101: those claims which are drawn to the practical application of human ingenuity or of discoveries are eligible for patenting.

C. The Federal Circuit Has Improperly Converted a Flexible, Adaptable Approach Into a Hard-and-Fast Rule

There is no principled basis to categorically exclude a particular technology, such as a business method or a mathematical algorithm, from the "process" category. Unfortunately, the Federal Circuit's decision below creates just such a hard-and-fast rule. In essence, the Federal Circuit held that a process is unpatentable under Section 101 unless it is (1) tied to a particular machine or (2) transforms an article into another state or thing. *Bilski*, 545 F.3d at 961-2. Even if a process meets this test, it is nonetheless unpatentable if the machine or transformation is merely incidental pre- or post-solution activity or if the process would effectively preempt all use of an idea, natural phenomenon, mental process, or algorithm, even in a particular field of use. *Id.*

The Federal Circuit purported to draw this rigid rule from the Court's decisions in *Benson*, *Flook*, and *Diehr*, but it ignored the language noted above making clear that characteristics such as particular machines and physical transformations were relevant considerations—*not absolute requirements*—for patentable subject matter. In its zeal for constructing bright-line rules,[8] the Federal Circuit has missed the texture and nuance of this Court's opinions.

In so doing, the Federal Circuit's test raises a host of problems and questions that are not only unanswered, but probably unanswerable. Is a general purpose computer a "specific machine"? Does the movement of a physical object from one place to another "transform" that object or its environment? Does the collection and analysis of, for example, blood transform an object, or is it merely "insignificant pre-solution activity"? When is data "representative of a physical thing"? Many of these questions reflect close cases involving the patentability of medical diagnostic processes, software, and putatively "non-technological" processes. But rather than evaluate those questions on their individual merits, as it has been wont to do in other areas of patent law, the Federal Circuit would willy-nilly apply a single, hard-and-fast rule cobbled together from out-of-context quotations and myopic renderings of this Court's opinions.

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[8] This is not the first time this Court has reviewed the Federal Circuit's conversion of a flexible standard into a bright-line rule. In *KSR v. Teleflex*, 550 U.S. 398 (2007), this Court rejected the Federal Circuit's "teaching-suggestion-motivation" test as the exclusive test for obviousness. In *MedImmune, Inc. v. Genentech, Inc.*, 549 U.S. 118 (2007), this Court rejected the Federal Circuit's "reasonable apprehension of imminent suit" test as the exclusive test for declaratory judgment jurisdiction in patent cases. In *eBay, Inc. v. MercExchange LLC*, 547 U.S. 388 (2006), this Court rejected the Federal Circuit's rule that successful patentees are always entitled to injunctive relief in favor of a more flexible, four-factor test. And in *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722 (2002), this Court rejected the Federal Circuit's absolute approach to prosecution history estoppel in favor of a more flexible approach.

II. Arbitrarily Narrow Limits on Patentable Subject Matter Will Reduce Incentives to Produce Valuable Inventions

The core mission of the patent law is to create incentives for the production, disclosure, and commercialization of socially valuable inventions. The flexibility of the patentable subject matter requirement is particularly important given the rapidly changing nature of technology. This Court last considered the scope of patentable subject matter in 1981, based on inventions made nearly a decade earlier.[9] At the time those inventions were made, the biotechnology industry was in its infancy. There was no such thing as a personal computer or a cell phone, and the Internet was something used by only a few computer scientists at universities. Had the Court created an inflexible rule in 1981 governing the patentability of software or communications technologies, that rule could have had a range of unintended consequences, preventing the patenting of important new inventions in a wide range of fields. For example, *Benson* involved a claim to an abstract mathematical algorithm—which was thus unpatentable—but misreading of the opinion led many to a fundamental misapprehension that all software programs consisted of "abstract algorithms." Software does indeed consist of algorithms, but they are anything but abstract. Software programs accomplish specific results. And modern software patents mostly cover, not abstract mathematical concepts, but detailed engineering implementations of ideas that happen to be expressed in the language of mathematics. These implementations appear in many industries, from automotive to yarn making. Quite simply, innovation in industry must necessarily include innovation in applied processes. The patent application in *Benson* may have locked up all uses of an abstract idea, but it does not follow that all or even very many software patents pose a similar risk.

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[9] This Court did decide the patentability of plants under Section 101 in *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124 (2002), but that case involved the interaction between that statute and another, not the scope of Section 101 *per se*. *Id.*, at 127. Even so, the Court opted for a broad definition of patentable subject matter. *Id.*, at 131, 145-46.

This Court has long recognized that Section 101's limitation on patentable subject matter plays a role in this mission, by placing beyond the realm of patentability certain limited classes of subject matter—classically described as "laws of nature, natural phenomena, and abstract ideas." *See, e.g.*, *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980); *Diamond v. Diehr*, 450 U.S. 175, 182 (1981). The worry is that to allow patentability for these "manifestations of . . . nature, free to all men and reserved exclusively to none," *Chakrabarty*, *supra*, at 309 (quoting *Funk Bros. Seed Co. v. Kalo Inoculants Co.*, 333 U.S. 127, 130 (1948)), would upset the delicate balance between patentees and the public.

At the same time, however, limitations on patentable subject matter are a blunt instrument, because they deny patentability to a range of subject matter regardless of how innovative it might be. Expanding these categorical denials of patentability beyond this well-established core of exceptions would work a harm of unpredictable magnitude on the incentives to innovate in the United States.

For this reason, bright-line tests that attempt to exclude specific types of technologies are problematic. There is no clear dividing line between "software" and "non-software" patents, or a computer system that implements a "business method" and one that implements some other type of process, or between "technological" and "non-technological" inventions. More importantly, new and nonobvious innovations do not occur only on one side of any of these lines. Any of these tests, proposed decades ago, would have missed important new and non-abstract inventions.

A. The Flexible Applied/Abstract Doctrine Promotes Innovation

This Court has recognized that allowing patenting of mathematical algorithms in the abstract would harm innovation by allowing patent-holders to "wholly preempt the mathematical formula," and thus encompass every conceivable use of a fundamental principle. *See, e.g.*, *Benson*, 409 U.S. 63, 71-72; *see also Diehr*, 450 U.S. at 188.

At the same time, the law recognizes that in many cases it will be the recognition and implementation of the practical utility of an algorithm that is an innovation: the use of the Arrhenius equation to determine cure time in rubber, the use of basic geometric principles to guide the intensity of pixel display on a screen, or perhaps the use of accounting principles in an automated hub-and-spoke arrangement among mutual funds. *See Diehr*, 450 U.S. at 178-79; *In re Alappat*, 33 F.3d 1526, 1538-39 (Fed. Cir. 1994); *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 1371-72 (Fed. Cir. 1998).

The right balance, then, is one that prevents the patenting of subject matter that, because of its abstract nature, properly belongs in the commons upon which future innovations can be built, "free to all men and reserved exclusively to none," but permits patenting inventions that build upon that commons to implement an idea, law of nature, or natural phenomena in a new and nonobvious practical application. This was, we think, exactly the balance struck by the Court (and, indeed, the Federal Circuit itself) before the Federal Circuit's recent misadventure in *Bilski*.

B. The Federal Circuit's Rule Will Harm Innovation

The Federal Circuit's conclusion in this case—that "processes" cannot be patented unless they involve an unmistakable physical or mechanical component—would alter the line between patentable and unpatentable subject matter from one that merely requires a practical application of an algorithm to one that requires some form of physical manifestation or transformation. We addressed the statutory and practical problems with a physical transformation requirement above. Here, we address a different concern with the Federal Circuit's newly minted test—namely, the suggestion that not only must an invention include some physical embodiment or material transformation, but that the physical or material aspect of the claimed invention itself must be the "point of novelty" in the invention rather than an "insignificant" part of the invention. *Bilski*, 545 F.3d at 957.

Such an approach would return the law to the oft misunderstood dicta of *Parker v. Flook*, 437 U.S. 584 (1978), which was clarified a mere three years later by this Court in *Diamond v. Diehr*, 450 U.S. 175, 185 (1981) ("Our recent holdings in *Gottschalk v. Benson* [] and *Parker v. Flook* ... stand for no more than these long-established principles [that abstract ideas are not patentable]"). The Federal Circuit's approach would not merely exclude "mental" processes standing alone from patentability, but would effectively exclude even ideas or algorithms that have a definite practical application by requiring that the *physical embodiment*—not the idea or process itself—be new and nonobvious.

The problem with excluding new ideas from consideration in the novelty and nonobviousness inquiry is that doing so would exclude many of our most important inventions from patentability despite unmistakable statutory language to the contrary. Take, for example, new uses of existing chemicals. If a drug company discovers that an existing chemical can be used to treat depression by selectively inhibiting the uptake of serotonin in the human brain, the physical step that follows—putting that chemical into pill form and prescribing it to patients—is straightforward and obvious. The real inventive work is in the discovery of the new use for the chemical.[10]

That discovery, standing alone, may be an abstract idea, or merely the identification of a natural phenomenon—but it would be unwise in the extreme to bar patentability for the practical application of this discovery to a new and useful end merely because that practical application was the result of a discovery. The pharmaceutical industry relies on patent protection to recoup the hundreds of millions of dollars it invests in developing and testing new drugs. *See* Pharmaceutical Research and Manufacturers of America, Why Do Prescription Drugs Cost So Much . . . , http://www.phrma.org/publications/publications/brochure/questions/. And pharmaceutical compositions—even those based on natural products—have been patentable for years. *See* 35 U.S.C. § 100(b) (stating that a "process" includes "a new use of a known process, machine, manufacture, composition of matter, or material").

Other examples involve DNA patents or computer programs. There are literally thousands of patents on isolated or chimeric human DNA sequences that serve an identified purpose. These gene sequences are not, of course, patentable as they exist in the human body, but they should be considered patentable when they are altered from their natural state in a way that achieves a practical result, such as moving that gene sequence into a new bacterium to change the behavior of that bacterium. *See Diamond v. Chakrabarty*, 447 U.S. 303 (1980); *see also Parke Davis & Co. v. H.K. Mulford & Co.*, 189 F. 95 (S.D.N.Y. 1911) (L. Hand, J.) ("[W]hile it is of course possible logically to call this a purification of the principle, it became for every practical purpose a new thing commercially and therapeutically. That was a good ground for a patent."). But it is not the isolation of the DNA sequence itself that makes the invention socially valuable; it is the identification of the function of the particular gene that is critical to the practical use of that sequence. Under the Federal Circuit's strained reading of *Flook*, though, courts would be forced to disregard the important discovery of the function of the gene, since it was a discovery of a natural principle, and could ask only whether the physical isolation of that particular gene was nonobvious given the isolation of thousands of similar genes in the past.

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[10] For example, note the history of minoxodil, which was originally marketed as a drug to treat high blood pressure, and is now better known for its success in treating hair loss (as *Rogaine*). *See* http://minoxidil.us/history.htm. *See also* U.S. Pat. No. 4,877,805 (Oct. 31, 1989) ("Methods for treating sundamaged human skin with retinoids") (new use of Retin-A).

The same is true of software: the value of a new program is often not the transformation of a physical object such as a computer but the fact that information is processed differently by the new program or that the program generates new information as results. An invention that doubles the speed at which a computer starts up, for instance, does not necessarily transform anything physical, but it is a valuable improvement that makes it easier to use a computer. Yet again, under the Federal Circuit's inflexible test – one expressly rejected in *Diehr*,[11] that would not matter—it is only the incidental change to the physical environment that would determine patentability of the new algorithm or program.

It is true that some would celebrate the effective elimination of software and DNA patents, and perhaps even the elimination of drug patents. But that decision should be made, if at all, by Congress. And we think it unlikely in the extreme that Congress would or should adopt such a restrictive view of patentable subject matter. Pharmaceutical and biotechnology patents are critical to encouraging innovation in those industries. And while there is more controversy over the net benefits of software patents, Congress has not seen fit to abolish or restrict them. Indeed, no one has introduced a bill doing so despite intensive Congressional consideration of patent reform over the past four years.

The risk of a limited conception of patentable subject matter is broader than the damage that might be done to existing industries that rely on patent protection.

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[11] Specifically, the Court stated:

> In determining the eligibility of respondents' claimed process for patent protection under § 101, their claims must be considered as a whole. It is inappropriate to dissect the claims into old and new elements and then to ignore the presence of the old elements in the analysis. This is particularly true in a process claim because a new combination of steps in a process may be patentable even though all the constituents of the combination were well known and in common use before the combination was made.

450 U.S., at 188.

A broad eligibility requirement enables the patent system to respond flexibly to the development of new technologies. *See Chakrabarty*, 447 U.S. at 316 ("A rule that unanticipated inventions are without protection would conflict with the core concept of the patent law that anticipation undermines patentability. . . . Congress employed broad general language in drafting § 101 precisely because such inventions are often unforeseeable."). If patentable subject matter is restricted to nonobvious *physical embodiments*, some new and as-yet-unforeseen field of invention may not qualify for patent protection. A rule that applies modern understandings of what constitutes technology to new fields of endeavor deprives patent law of the flexibility it needs to provide effective protection to new technologies.

We respectfully suggest, therefore, that the proper approach to patentable subject matter is articulated in this Court's decisions in *Diamond v. Diehr* and *Diamond v. Chakrabarty*, not the Federal Circuit's overly narrow reading of *Parker v. Flook* – a reading rejected by this Court. The question of whether an invention is patentable subject matter should be answered by looking at the claimed invention as a whole, not by dissecting it into its parts and disregarding some of those parts.

The Federal Circuit paid lip service to this principle, announcing that it would not require that the physical implementation as opposed to the invention as a whole be the novel and nonobvious feature of the invention. But it then undermined that principle by reading *Diehr* and *Flook* incorrectly to reach the conclusion that physical activity must be "significant." This Court did point out in *Diehr*, 450 U.S. at 191-92, that an applicant could not avoid the abstract ideas limitation by adding a trivial physical embodiment to a claim covering an abstract idea. But the point of that test, properly understood, is to prevent strategic behavior from undermining the limitation on patenting abstract ideas. The Federal Circuit erred by reifying that practical limit into a requirement that there must always be a physical transformation or mechanical implementation of an invention that is itself "significant." The right question is whether the claim as a whole is being used as a vehicle to lock up the unpatentable principle, not whether the particular application of that principle being patented is or is not physical or "significant."

III. Existing Patent Doctrines Can Deal With the Problems Bad Patent Applications Create

We acknowledge that there are problems with software and so-called "business method" patents. The Patent Office has doubtless issued many patents it should not have, the uncertainties of claim construction and other doctrines may allow plaintiffs to overclaim even valid patents, and aspects of damages rules may lead some to seek to capture more than the economic value of their invention. But existing patent doctrines of novelty, obviousness, enablement, claim construction, and remedies are better suited to address bad patents and the problems they create.

A. The Patent Act Provides the Tools to Bar Bad Patents

There are very few, if any, questionable patents—including the Bilski application—that might be barred on subject matter grounds that could not also be barred by other patentability criteria. The Board of Patent Appeals and Interferences (BPAI) recognized this point in this case, rejecting the patent on subject matter grounds, and only subject matter grounds, to ensure that the Federal Circuit would actually see an appeal on such grounds. *See Ex parte Bilski*, Appeal No. 2002-2257 (Sept. 26, 2006). For that reason, a holding that Bilski's application claims patentable subject matter would not necessarily mean that the invention at issue is patentable. In fact, we strongly suspect that Bilski's application could easily be rejected on novelty and nonobviousness grounds.

In general, there are many options for barring bad patents, including improperly issued "business methods" patents and "mental steps" claims:

(1) Novelty and Obviousness. One recurring criticism, especially for software and business methods patents, has been that the Patent Office has granted claims for old and obvious methods. This is not a problem of subject matter but of application; after this Court's recent decision in *KSR*, it is much easier for lower courts to reject or invalidate specious claims. *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007). Additionally, the Patent Office has more strictly applied patentability criteria and the grant rate in the "business method"

class has fallen dramatically. *See* Mark A. Lemley & Bhaven Sampat, *Is the Patent Office a Rubber Stamp?*, 58 Emory L.J. 181 (2008) (finding that only 15% of applications in Class 705, business methods, had been approved 7½ years after filing).

Another concern with business method patents is that they protect methods that are widely practiced, but undiscoverable by patent examiners in order to use as "prior art" to reject patents.[12] This, too, is not an issue of subject matter; patent law has never barred patents because others have used methods secretly. *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F. 2d 1540, 1550 (Fed. Cir. 1983). Instead, it reflects a concern, not that existing rules are inadequate, but that they are not always applied in the Patent Office with enough care. In fact, as examiners have gained more experience with such patents and with searching public databases for information about them, they have rejected more patents. *See* Mark A. Lemley & Bhaven Sampat, *supra*.

Indeed, complaints about examiner difficulty in finding publicly disclosed methods in patents and similar prior art are quite ironic, for they are in part a product of pre-*Diehr* uncertainty about software patents. The perceived inability to patent software-related inventions drove such inventions "underground" into trade secrecy or into disguise as non-software inventions, making them more difficult to find and apply to invalidate patents today. That was a mistake that should not be repeated—the business methods applications of the past decade or more, whether issued as patents or not, will provide a wealth of publicly available prior art for future filings. Forcing companies to keep such methods secret or disguise them as other technologies will only further deplete the prior art pool.

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[12] Robert P. Merges, *As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform*, 14 Berkeley Tech. L.J. 577, 589 (1999).

(2) Utility. Part of the Section 101 analysis includes determining whether a claimed invention has utility. See 35 U.S.C. § 101 ("Whoever invents or discovers any new and *useful* process . . . .") (emphasis added). The traditional test for utility is "practical," not "technological" utility. Practical utility requirements serve to bar otherwise abstract ideas and algorithms. For example, a standalone mathematical algorithm would not be patentable because it does not have practical utility, even if the algorithm is a process under Section 101. While such an algorithm may allow for new, faster, or more accurate computation of real world effects, it does not "do" anything unless coupled to some useful process or device, and practical utility requires some contribution beyond the possibility of calculation. *See In re Schrader*, 22 F.3d 290, 295 (Fed. Cir. 1994) (some sort of practical effect is required, even if not a physical transformation).

(3) Specification and Claiming. A primary concern with any effort to deny patentability to claims that are solely composed of "mental steps" is that human intervention fails the definiteness, written description, and enablement tests under 35 U.S.C. § 112, because—as a species of "abstract ideas"—they allow for claims that are far broader than the applicant has disclosed.

Indeed, we showed earlier how this Court has historically used the enablement standard of Section 112 to determine whether a claimed invention is an "abstract idea." By limiting a patentee to what he has actually taught one of ordinary skill in the art to make and use, the enablement doctrine prevents just the sort of sweeping claims to abstract ideas with which this Court's Section 101 cases have been concerned. Indeed, the claim invalidated in *Morse* was suspect in large part due to lack of enablement. 56 U.S., at 112-21.

In this regard, we think it is essentially impossible to draw a principled boundary around claims that are completely "mental." By contrast, a rule that permits patenting so long as the mental step is one that is claimed only in connection with a practical application of the idea—which requires that a claim be enabled by the patent's disclosure—avoids such a problem.

B. Other Doctrines Limit the Harm from Weak Patents

To the extent that the traditional statutory patentability criteria do not weed out bad patents, recent changes in the law will reduce the harm caused by those weak patents. For example, in *MedImmune, Inc. v. Genentech, Inc.*, 549 U.S. 118 (2007), this Court loosened the standards for declaratory judgment of patent invalidity, making it easier for potential defendants to seek to invalidate patents. Similarly, the Federal Circuit's recent determination in *In re Seagate Tech., LLC*, 497 F.3d 1360, 1371 (Fed. Cir. 2007) (en banc), that willful infringement requires objective recklessness reduces the risks associated with reviewing patents in any given subject area. As such, *Seagate* will allow potential defendants to read patents and decide whether to design around or challenge weak patents rather than simply close their eyes to the existence of weak patents.

Finally, in *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388 (2006), this Court held that lower courts have discretion to deny injunctive relief in accordance with the principles of equity. District courts can use this discretion to deny injunctions in cases in which the owner of a valid patent seeks to "hold up" a defendant by threatening to shut down a large, multi-component product because of infringement of a small piece of that product.[13]

In sum, the courts have a combination of statutory and doctrinal tools available to reject, invalidate, or narrow patents that might otherwise be considered problematic. Congress is actively considering further changes to the patent system designed to improve the scrutiny of patent applications and reduce abuse of bad patents. Those tools are far better suited toward limiting the social harm from inappropriate claims than any "subject matter" test will ever be. And they pose less risk of categorically denying important new inventions the benefits of patent protection. As such, these other doctrines should be used whenever possible in lieu of difficult-to-enforce subject matter bars. *See* Kristen Osenga, *Ants, Elephant Guns, and Statutory Subject Matter*, 39 Ariz. St. L.J. 1087 (2007); Michael Risch, *Everything is Patentable*, 75 Tenn. L. Rev. 591, 606-7 (2008); Christopher Todd Abernethy, Note, *Cruel Hand of Bilski: Culminating the Shortsighted Crusade for Marginalization of the 'Process' Patent*, available at http://papers.ssrn.com/sol3/ papers.cfm?abstract_ id=1420205.

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[13] These reforms do not end the problem of holdup, of course, though they reduce it.

IV. Bilski's Application Fails This Court's Applied/ Abstract Test

Using this Court's applied/abstract dichotomy, we believe the *Bilski* application is unpatentable as an abstract idea. *Bilski*, 545 F.3d at 1015 (Rader, J. dissenting). The representative claim 1[14] relates to an abstract concept: a method of hedging by identifying parties with differing risk profiles. Importantly, the claim is not for a practical application of hedging; rather, it is so broadly enumerated as to be a general principle that is non-enabled. For example, the claim purports to cover every method of identifying the risk profiles for buyers and sellers of different types of commodities, while the patent fails to describe or enable such a broad claim.

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[14] Claim 1 reads:

> A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of: (a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer; (b) identifying market participants for said commodity having a counter-risk position to said consumers; and (c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions.

J.A. 19-20.

The Bilski application is remarkably similar to that of *Morse*. The application describes and enables a very specific application regarding energy that is affected by weather. The application discloses, among other things, gathering data about the previous 20 years worth of transactions and weather; simulating the payoffs and profits from historical transactions and hypothetical weather levels, repeating the process until the simulations yield acceptable profits, and steps to buy and sell options to hedge against risk. J.A. 16-19.

Like the "system of signs" claim upheld in *Morse*, this disclosure might well support a claim relating to the particular application described, assuming that other patentability criteria are met. But it does not justify granting a patent on all forms of hedging risk, just as Morse's pioneering invention did not justify his claim to all electromagnetic communication.

Like the claims of Morse's patent that this Court upheld as patentable, the Bilski claim could be made practical in a number of ways—namely, by limiting it to an enabled invention either by claiming more specific means to carry out the method or by more narrowly claiming the steps of the method.[15] Yet, contrary to the Federal Circuit's position, none of these paths to patentability turns on the claiming of a machine or transformation of matter.

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[15] Even so limited, it is likely that the Bilski application is unpatentable because it purports to cover technology already known or obvious to those of skill in the art.

CONCLUSION

The patent statutes were wisely drafted with an expansive vision of patentable subject matter. Efforts to graft judicially created limitations onto that expansive scope in the past have proven fruitless and indeed counterproductive. This Court should not impose a requirement that patentable inventions require a machine or the physical transformation of some material. It should instead maintain the rule that patents are available for "anything under the sun made by man," including discoveries of ideas, laws of nature, or natural phenomena so long as they are implemented in a practical application. In short, the test should be as it has been: where an idea is claimed *as applied*, it is eligible for patentability, but if it is claimed merely *in the abstract* it is not.

Respectfully submitted,

MICHAEL RISCH
WEST VIRGINIA UNIVERSITY
COLLEGE OF LAW
P.O. Box 6130
Morgantown, WV 26506

MARK A. LEMLEY
Counsel of Record
STANFORD LAW SCHOOL
559 Nathan Abbott Way
Stanford, CA 94305
(650) 723-4605

R. POLK WAGNER
UNIVERSITY OF PENNSYLVANIA
LAW SCHOOL
3400 Chestnut Street
Philadelphia, PA 19104

TED SICHELMAN
UNIVERSITY OF SAN DIEGO
LAW SCHOOL
5998 Alcalá Park
San Diego, CA 92110

Attorneys for Amici Curiae

APPENDIX

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List of Signatories[1]

Professor John R. Allison
McCombs Graduate School of Business
University of Texas at Austin

Professor Dan L. Burk
Chancellor's Professor of Law
University of California, Irvine School of Law

Professor Daniel R. Cahoy
Smeal College of Business
Penn State University

Professor Michael A. Carrier
Rutgers Law School-Camden

Professor Christopher A. Cotropia
University of Richmond School of Law

Professor Emir Aly Crowne-Mohammed
University of Windsor Law School

Professor Stacey L. Dogan
Boston University School of Law

Professor Thomas G. Field, Jr.
Franklin Pierce Law Center

---

[1] Institutions listed for identification purposes only.

Professor Richard S. Gruner
John Marshall Law School

Professor Chris Holman
UMKC School of Law

Professor Mark A. Lemley
William H. Neukom Professor
Stanford Law School

Professor Michael J. Madison
University of Pittsburgh School of Law

Professor Joseph S. Miller
Lewis & Clark Law School

Professor Stephen McJohn
Suffolk University Law School

Professor Kristen Osenga
University of Richmond School of Law

Professor Lee Petherbridge
Loyola Law School – Los Angeles

Professor Michael Risch
West Virginia University College of Law

Professor Kurt M. Saunders
College of Economics and Business
California State University - Northridge

Professor Ted Sichelman
University of San Diego Law School

Professor R. Polk Wagner
University of Pennsylvania Law School

AMICUS
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IN THE

Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,
v.

JOHN J. DOLL, ACTING UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND ACTING DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF AMICUS CURIAE THE UNIVERSITY OF SOUTH FLORIDA IN SUPPORT OF PETITIONERS

Jeff Lloyd
Counsel of Record
Saliwanchik, Lloyd & Saliwanchik
A Professional Association
P.O. Box 142950
Gainesville, FL 32614-2950
(352) 375-8100

Attorney for Amicus Curiae
The University of South Florida

TC+TA
005 4XIVBE

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INTEREST OF AMICUS CURIAE[1]

The University of South Florida (hereinafter, "USF") is the nation's ninth largest public university and a leading research institution. Founded in 1956, USF has over 46,000 students and more than 13,000 faculty and staff members, with an annual operating budget in excess of $1.8 billion dollars. USF's mission includes research and scientific discovery for the generation, dissemination, and translation of new knowledge across disciplines; to strengthen the economy; to promote civic culture and the arts; and to design and build sustainable, healthy communities. Fueled by its research efforts, USF has a substantial economic impact on its region estimated at over $3.2 billion dollars annually.

USF medical researchers strive to expand the frontiers of medicine, searching for improved methods of diagnosing, prognosing, and treating diseases such as cancer, HIV, diabetes, and neurological disorders such as Alzheimer's and Parkinson's diseases. USF is one of the top 50 medical schools receiving funding from the National Institutes of Health, and USF's Pediatric Epidemiology Center has received over $300 million dollars in NIH funding to direct global efforts in juvenile diabetes research. For the 2007/2008 fiscal year alone, USF was awarded more than $360 million dollars in research contracts and grants. USF's hospital partners, Tampa General Hospital and the H. Lee Moffitt Cancer Center and Research Institute, have been ranked among the nation's top 50 hospitals by U.S. News & World Report; and USF is classified by the Carnegie Foundation as a top tier research university.

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[1] In accordance with Supreme Court Rule 37, *amicus curiae* states that this brief was not authored in whole or in part by counsel for any party, and that no monetary contribution to the preparation or submission of this brief was made by any person or entity other than *amicus curiae* or its counsel. Counsel of record for all parties were timely notified 10 days prior to the filing of this brief. Petitioners have consented to the filing of all *amicus curiae* briefs in support of either or neither party, and respondent has consented to the filing of this brief via a separate letter of consent dated July 14, 2009. A copy of this letter has been filed with the Clerk of the Court.

USF has a diverse portfolio of patents and pending patent applications across a wide range of medical technologies, which through USF's licensing efforts generate additional funding to support further research. The new patent eligibility standards adopted by the Court of Appeals for the Federal Circuit in *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008), and as applied by the Federal Circuit in *Classen Immunotherapies, Inc. v. Biogen IDEC*, 304 F.App'x 866 (Fed. Cir. 2008), if allowed to stand and proceed unchecked may have an adverse affect on USF's research programs.

Amicus curiae therefore submits this brief to present argument in support of an affirmative response to the first question presented. Amicus curiae presents no argument here on the second question presented.

SUMMARY OF THE ARGUMENT

The Federal Circuit's "machine-or-transformation" test is more restrictive than any Supreme Court precedent, excluding from patent eligibility certain processes that Congress intended to be patent eligible. The test has been applied to invalidate issued claims directed to certain medical methods. There is no legislative basis for such a restriction. Methods that promote the progress of medicine, diagnosis and treatment in particular, were clearly contemplated by the Framers of the Constitution as well as members of Congress to be patent eligible. Courts should not read into the patent laws limitations and conditions which Congress has not expressed. Despite this, the Federal Circuit adopted the "machine-or-transformation" test as the sole test for patent eligibility of a process, thereby excluding from patent eligibility subject matter that Congress clearly considered patent eligible. This was error. The first question presented should be answered in the affirmative, and the Federal Circuit's error should be reversed.

ARGUMENT

I. The Federal Circuit's new test is overly restrictive.

The Federal Circuit's holding that a process claim that "neither recites a particular machine or apparatus, nor transforms any article into a different state or thing, is not drawn to patent-eligible subject matter" unnecessarily, unwisely, and improperly excludes from patent protection technologies that Congress clearly intended to be patentable. *In re Bilski*, 545 F.3d 943, 961 (Fed. Cir. 2008). This "machine-or-transformation" test is useful as a **starting point** for determining whether process claims are directed to patent eligible subject matter. This Court has held that the "machine-or-transformation" test is sufficient to qualify a process claim as patent eligible, but the Court has declined to state that passing this test is a necessary requirement for the patent eligibility of a process claim. *See Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 71 (1972). Excluding from patent eligibility certain processes involving medical diagnosis and treatment merely because they do not recite a particular machine or apparatus or transform an article into a different state or thing is improper, as such processes are unquestionably within the realm of patent eligible subject matter. Yet this is exactly what the Federal Circuit's "machine-or-transformation" test has done.

The Federal Circuit first applied its new "machine-or-transformation" test in a single-paragraph, nonprecedential opinion in *Classen*

Immunotherapies, Inc. v. Biogen IDEC, affirming a district court judgment invalidating claims to methods of immunizing a mammalian subject.[2] 304 F.App'x 866 (Fed. Cir. Dec. 19, 2008), *reh'g denied en banc reh'g denied* (Feb. 9, 2009). While the claims at issue might well have been found invalid on other grounds (for example, as obvious or anticipated), as discussed below, they are certainly within the realm of subject matter contemplated as patent eligible by the Framers of the Constitution and Congress. Thus, applying the "machine-or-transformation" test as the only test for patent eligibility is clearly improper.

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[2] The district court had summarized the *Classen* claims as requiring "1) comparing the incidence of immune mediated disorders in treatment groups with different vaccination schedules; and 2) immunizing patients on a schedule identified as low risk." *Classen Immunotherapies, Inc. v. Biogen IDEC*, Civil No. WDQ-04-2607, 2006 WL 6161856, at *5 (D. Md. Aug. 16, 2006). Rather than properly construing the claims as "a method for reducing the incidence of chronic immune mediated disorders" and recognizing that an improved process of vaccination is a human invention, the district court held that the claims describe a natural correlation. *Id.* Characterizing the correlation between vaccination schedules and incidents of immune mediated disorders as a natural phenomenon, the court held the claims invalid as an attempt to patent a natural phenomenon. *Id.* The district court's reasoning was faulty: the existence of an immune response in mammals is a natural phenomenon. Human experimentation, manipulation, and optimization of the immune response to achieve beneficial results is **not** a natural phenomenon. On appeal, the Federal Circuit did not discuss whether the claims describe a natural phenomenon. Instead, the panel applied the new test without analysis, declaring "Dr. Classen's claims are neither 'tied to a particular machine or apparatus' nor do they 'transform[ ] a particular article into a different state or thing.' Therefore we affirm." *Classen*, 304 F.App'x at 867 (quoting *In re Bilski*, 545 F.3d. at 954) (alteration in original).

II. The Framers of the Constitution intended to promote advances in medical diagnosis and treatment.

The Constitution grants Congress broad power to legislate to "promote the Progress of Science and useful Arts, by securing for limited Times to . . . Inventors the exclusive Right to their . . . Discoveries." U.S. CONST. art. I, § 8, cl. 8. At the time the Constitution was drafted, medicine had for more than two thousand years been known as one of the "useful Arts." *The Oath of Hippocrates* refers to medicine as "the art," "this art," or "my art" on five occasions. HIPPOCRATES, THE OATH AND LAW OF HIPPOCRATES, reprinted in 38 HARVARD CLASSICS, pt. 1 (Charles W. Eliot ed., P.F. Collier & Son 1910) (1909). The first sentence of *The Law of Hippocrates* states "Medicine is of all the Arts the most noble; but owing to the ignorance of the ones who practice it, . . . it is at present far behind all the other arts." *Id.* In the late 18th century, those who were educated in classical learning included Thomas Jefferson, and they were well aware that medicine was one of the "useful Arts."

In *Graham v. John Deere*, this Court discussed the legislative history of patent law at length, including analysis of the influence of Thomas Jefferson on the development of our patent system, noting "[b]ecause of his active interest and influence in the early development of the patent system, Jefferson's views on the general nature of the limited patent monopoly under the Constitution, as well as his conclusions as to conditions for patentability under the statutory scheme, are worthy of note." 383 U.S. 1, 7 (1966). As illustrated below, Jefferson's writings and other writings of his time indicate that medicine, including methods of treatment and diagnosis, would have been included in the Framers' definition of "useful Arts."

In Jefferson's time and in Jefferson's mind, medicine was clearly understood to be one of the "useful Arts." The first edition of the *Encyclopædia Britannica* states:

> Medicine is generally defined to be, **The art** of preserving health when present and of restoring it when lost . . . . Most **arts** require the experience of ages before they can arrive at a high degree of perfection. Medicine is unquestionably one of the most ancient; and consequently, the improvement of it might be expected to bear some proportion to its antiquity but, whilst philosophy, in all its branches, has been cultivated and improved to a great extent; medicine, not withstanding the collateral advantages it has of late derived from anatomy and other sciences still continues to be buried in rubbish and obscurity.

3 A SOC'Y OF GENTLEMEN IN SCOT., ENCYCLOPÆDIA BRITANNICA 58 (1st ed. 1771) [hereinafter ENCYCLOPÆDIA BRITANNICA] (emphasis added).

Jefferson's letters make clear that he considered medicine to be one of the "useful Arts" in need of advancement through both observation and innovation. For example, in his letter on "Freedom of Mind" to William Green Munford dated June 18, 1799, Jefferson states:

> Surgery is well advanced; but prodigiously short of what may be. The state of medecine [sic] is worse than that of total ignorance . . . . We have a few medecines, as the bark, opium, mercury, which in a few well defined diseases are of unquestionable virtue: but the residuary list of the materia medica, long as it is, contains but the charlataneries of **the art**; and of the diseases of doubtful form, physicians have ever had a false knowledge, worse than ignorance. Yet surely the list of unequivocal diseases & remedies is capable of enlargement; and it is still more certain that in the other branches of science, great fields are yet to be explored to which our faculties are equal, & that to an extent of which we cannot fix the limits. I join you therefore in branding as cowardly the idea that the human mind is incapable of further advances.

THOMAS JEFFERSON, WRITINGS 1065 (Merrill D. Peterson ed., Library of America 1984) (emphasis added). Similar evidence is found in Jefferson's letter entitled "Unlearned Views of Medicine" to Dr. Caspar, dated June 21, 1807. In this letter, Jefferson provides his opinions on the state of medicine and medical education:

> . . . [F]ulness of the stomach we can relieve

> by emetics; diseases of the bowels, by purgatives; inflammatory cases, by bleeding; intermittents [fevers], by the Peruvian bark; syphilis, by mercury; watchfulness, by opium; etc. So far, I bow to the **utility of medicine**. It goes to the well-defined forms of disease, & happily, to those the most frequent. But the disorders of the animal body . . . are as various as the elements of which the body is composed . . . . To an unknown disease, there cannot be a known remedy. Here then, the judicious, the moral, the humane physician should stop . . . . But the adventurous physician goes on, & substitutes presumption for knolege [sic] . . . . It is in this part of medicine that I wish to see a reform, an abandonment of hypothesis for sober facts, the first degree of value set on clinical observation, and the lowest on visionary theories . . . . I would wish the young practitioner . . . to have deeply impressed on his mind, the real limits of **his art**.

Id. at 1181-1185 (emphasis added). Yet another example can be found in Jefferson's letter "The Value of Classical Learning" to John Brazier dated August 24, 1819. Jefferson advocated studying the Classics in their original Greek and Latin and was thoroughly familiar with the writings of Hippocrates. In discussing the benefits of classical learning and in particular its utility to various members of society, Jefferson notes that the Greek and Roman texts have given to physicians:

> as good a code of **his art** as has been given us to this day. Theories and systems of medicine, indeed, have been in perpetual change from the days of the good Hippocrates to the days of the good Rush, but which of them is the true one? The present, to be sure, as long as it is the present, but to yield its place in turn to the next novelty, which is then to become the true system, and is to mark the vast advance of medicine since the days of Hippocrates. **Our situation is certainly benefited** by the discovery of some new and very valuable medicines; and substituting those for some of his with the treasure of facts, and of sound observations recorded by him (mixed to be sure with anilities of his day) and we shall have nearly the present sum of **the healing art**.

Id. at 1424 (emphasis added). Thus, substantial evidence exists that Jefferson and others of his time considered the term "useful Arts" to encompass medicine. Moreover, these letters indicate that Jefferson considered medicine, including medical diagnosis and treatment, to be a field in which great progress was both possible and needed for the benefit of society.

The 1771 edition of *Encyclopædia Britannica* again echoes Jefferson's sentiments regarding the need for progress in the "art" of medicine:

> In every art which is not founded on known facts and established principles, new projects

> are eagerly grasped at; and though they lead to error and false reasoning, it is long before the professors of that art can be induced to give over the pursuit. **This observation is particularly applicable to medicine.** The theories of diseases, as well as the mode of prescription, are as variable as the fashion of a lady's headdress. No other argument is necessary to shew the crude state of **the art** and the boundless field for improvement.

3 ENCYCLOPÆDIA BRITANNICA, *supra,* at 60 (emphasis added).

Finally, one of the foremost medical experts of the 18th Century, Dr. William Cullen wrote in the first lines of the introduction of his two-volume treatise *First Lines of the Practice of Physic*:

> 1.] In teaching the Practice of Physic, we endeavor to give instruction for *discerning*, *distinguishing*, *preventing*, and *curing* diseases, as they occur in particular persons.
>
> 2.] **The art** of DISCERNING and DISTINGUISHING diseases . . . .

1 WILLIAM CULLEN, FIRST LINES OF THE PRACTICE OF PHYSIC 25 (New York, L. Nichols 1801) (Introduction written in 1789) (second emphasis added). Thus, authorities in the field of medicine also viewed various aspects of the field as an "art."

From the foregoing it is clear that the field of medicine was considered by the Framers to be one of the "useful Arts." It is also clear that procedures for diagnosis and treatment of diseases were considered arts within the more general art of medicine. Moreover, Jefferson and his contemporaries repeatedly voiced an acute need for progress in the art of medicine. The Constitution was thus drafted with an understanding of medicine as a "useful Art" in which "progress" was greatly desired.

III. Congress intended advances in medical diagnosis and treatment to be patent eligible subject matter.

From the first Patent Act, Congress has broadly described the class of inventions eligible to be considered for Patents. Later acts of Congress made clear that medicine, including methods of diagnosis and treatment, were meant to be included in that description. As further discussed below, reading the Patent Act in a manner which excludes methods of diagnosis and treatment from the class of patent eligible inventions is contrary to the legislative history as interpreted by this Court.

This Court has repeatedly recognized that the legislative history of the Patent Act supports a broad construction of patent eligible subject matter. In *Diamond v. Chakrabarty*, this Court noted that:

> The Patent Act of 1793, authored by Thomas Jefferson, defined statutory subject matter as "any new and useful art, machine, manufacture, or composition of matter, or any new or useful improvement [thereof]." Act of Feb. 21, 1793, § 1, 1 Stat. 319. The

> Act embodied Jefferson's philosophy that "ingenuity should receive a liberal encouragement." 5 Writings of Thomas Jefferson 75-76 (Washington ed. 1871). See *Graham v. John Deere Co.*, 383 U.S. 1, 7-10, 86 S.Ct. 684, 688-690, 15 L.Ed.2d 545 (1966). Subsequent patent statutes in 1836, 1870, and 1874 employed this same broad language. In 1952, when the patent laws were recodified, Congress replaced the word "art" with "process," but otherwise left Jefferson's language intact. The Committee Reports accompanying the 1952 Act inform us that Congress intended statutory subject matter to "include anything under the sun that is made by man." S.Rep.No.1979, 82d Cong., 2d Sess., 5 (1952); H.R.Rep.No.1923, 82d Cong., 2d Sess., 6 (1952).

447 U.S. 303, 308-309 (1980). Though Congress replaced the word "art" with "process," in the 1952 act, the act also defined "process" as "a process, art, or method." 35 U.S.C. § 101(b) (2006). Thus, the term "process" was defined as including that which it replaced. Accordingly, "any new and useful art . . . or any new or useful improvement [thereof]" which was patent eligible before enactment of the 1952 Patent Act remained patent eligible subject matter under the 1952 act.

In *Chakrabarty*, this Court went on to discuss the reasons behind a broad construction of the patent eligible subject matter provisions of the Patent Act. The Court recognized that "[t]he subject matter provisions of the patent law have been cast in broad terms to fulfill the constitutional and statutory goal of promoting 'the Progress of Science and the useful Arts' with all that means for the social and economic benefits envisioned by Jefferson." *Chakrabarty,* 447 U.S. at 315. As discussed above, advances in medicine, particularly methods of diagnosis and treatment, were social benefits that Jefferson hoped for and envisioned.

The current act provides further evidence that Congress intended processes of diagnosis and treatment to be patent eligible subject matter. In 1996, the act was amended to explicitly exclude medical practitioners from liability for infringing a patent by the performance of a medical or surgical procedure on a body (including a human body, organ, or cadaver, or a non-human animal). Omnibus Consolidated Appropriations Act, 1997, Pub. L. No. 104-208, 110 Stat. 3009-67 (codified as amended at 35 U.S.C. § 287(c) (2006)). Significantly, § 287 excludes from its application the practice of patented biotechnology processes and certain pharmacy and clinical laboratory services, for which medical practitioners remain liable for patent infringement. 35 U.S.C. § 287(c) (2006). The fact that Congress felt the need to create such exclusions makes clear that they intended new and useful medical processes such as methods of diagnosis or treatment to be patent eligible subject matter.

In *United States v. Dubilier Condenser Corp.*, this Court cautioned: "We should not read into the patent laws limitations and conditions which the

Legislature has not expressed." 289 U.S. 178, 199 (1933). The Federal Circuit's "machine-or-transformation" test as set forth in *In re Bilski* is more restrictive than required by this Court's precedent and finds no support in any legislation. In practice, it has already been applied to strike down patents directed to methods of immunizing patients with improved efficacy and safety thereby casting a cloud on the validity of a great many process patents in the medical and biotechnological fields.

The "machine-or-transformation" test is a useful starting point for analysis of patent eligibility of process claims. However, if a process claim is not tied to a particular machine or does not recite transformation of an article into a different state or thing, the inquiry should not stop there, as the process may still be patent eligible as long as it does not attempt to claim "laws of nature, natural phenomena, [or] abstract ideas." *Diamond v. Diehr*, 450 U.S. 175, 185 (1981). The inquiry should carefully analyze whether the claimed process is truly claiming a phenomenon of nature, ever mindful of the difference between phenomena that are entirely products of nature and inventions that are the result of how nature reacts to the purposeful activity of man. Where the activities of man cause a useful, tangible, concrete result that did not exist before, the process should be considered patent eligible.

CONCLUSION

The Federal Circuit's holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing, to be patent eligible is too restrictive. The holding excludes subject matter that Congress clearly intended to be patent eligible. Therefore, *amicus curiae* respectfully requests that the Court reverse the decision of the Federal Circuit and answer the first question presented in the affirmative.

Respectfully submitted,

Jeff Lloyd
Counsel of Record
Saliwanchik, Lloyd & Saliwanchik
A Professional Association
P.O. Box 142950
Gainesville, FL 32614-2950
(352) 375-8100

Attorney for Amicus Curiae
The University of South Florida

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ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF AMICUS CURIAE WASHINGTON STATE PATENT LAW ASSOCIATION IN SUPPORT OF PETITIONER

MICHAEL J. SWOPE,
President
Washington State Patent Law Association
P.O. Box 99305
Seattle, WA 98119

PETER J. KNUDSEN,
Counsel of Record
Woodcock Washburn, LLP
999 Third Avenue,
Seattle, WA 98104
(206) 332-1380
Counsel for Amicus Curiae,
WSPLA

BOTH 4XDHOW

810L

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I. INTRODUCTION AND STATEMENT OF INTEREST OF AMICUS CURIAE[1]

The questions presented in this appeal have a broad impact on inventions other than the "business method" claims of Petitioner's patent application. The Federal Circuit's "machine or transformation" test restricts patent eligibility. As a result, institutions will be incentivized to hold future inventions as trade secrets. This result is antithetical to the spirit of the patent laws, which aim to promote the progress of science through the sharing of critical technology.

The Washington State Patent Law Association ("WSPLA") is the leading organization for patent attorneys and other patent professionals in Washington State, providing a forum for patent and other intellectual property law issues, and serving as a valuable resource for patent attorneys, agents, educators, students, and owners of intellectual property.

WSPLA takes no position on the merits of Petitioner's alleged innovation.[2] WSPLA's only interest is to assure that the patent law is consistent with the Constitutional mandate to promote the progress of science and the useful arts.

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[1] This *amicus curiae* brief is presented by the Washington State Patent Law Association under Supreme Court Rule 37.3(a). Petitioner has consented to the filing of this *amicus curiae* brief by a blanket letter of consent filed with the Court February 4, 2009. Respondent has consented *via* a separate blanket letter of consent, dated July 21, 2009. In accordance with Supreme Court Rule 37.6, *amicus curiae* states that no counsel for a party authored any part of this brief. Only this *amicus curiae* made monetary contribution to the preparation and submission of this brief. Counsel for *amicus curiae* prepared this brief on a pro bono basis.

[2] We take no issue with the fact that State Street Bank may have "launched a legal tsunami, inundating the patent office with applications seeking protection for common business practices." *Bilski*, 545 F.3d at

In accordance with Rule 37 of this Court, WSPLA has notified and has consent of both Petitioner and Respondent to file this *amicus curiae* brief.

II. ISSUES PRESENTED

In the present brief we provide guidance to the questions presented in this Court's June 1, 2009 Order granting Petitioner's writ of certiorari:

> Whether the Federal Circuit erred by holding that a "process" must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ("machine-or-transformation" test), to be eligible for patenting under 35 U.S.C. §101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."
>
> Whether the Federal Circuit's "machine-or-transformation" test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect

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1004 (J. Mayer dissenting); however, the U.S. Patent & Trademark office is equipped to address "common" practices under §§ 102 and 103 of the statute.

"method[s] of doing or conducting business." 35 U.S.C. §273.

III. SUMMARY OF ARGUMENT

The standard that governs whether a process is patent eligible subject matter under 35 U.S.C. §101 should be grounded in this Court's precedent as set forth in *Diamond v. Chakrabarty*, 447 U.S. 303 (1980) and *Diamond v. Diehr*, 450 U.S. 175 (1981). A "process" entails an act or a series of acts performed upon a subject matter, or a mode of treatment of certain materials to produce a given result. When considered as a whole, a process must be new and useful in that it must be man-made and not exist in nature, and it must be practically useful. Such a process does not have to result in a physical transformation or be tied to a machine, although such provisions are indicia of patent eligibility.

In response to the Federal Circuit's opinion in *State St. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), Congress chose not to change the statutes governing patent eligibility. Rather, Congress enacted 35 U.S.C. §273, which strikes a fair balance between patent law and trade secret law (Congressional Record – Senate 146 Cong Rec. S. 14986, 14994 (11/19/99)). 35 U.S.C. §273 provides a first inventor defense to a patent infringement suit.

In enacting §273, Congress affirmed that the patent laws should encourage innovation, not create barriers to innovation. Although *State Street* could result in patents that prevent people from practicing what they were already doing Congress did not change §101. Instead, Congress balanced the interests of new patent owners with the interests of others already practicing the claimed inventions before the patents issued.

IV. ARGUMENT

A. The Federal Circuit erred

1. This Court's precedents do not support the Federal Circuit's conclusion that the "machine or transformation" test defines those inventions that are patent eligible

To "clarify the standards applicable in determining whether a claimed method constitutes a statutory 'process' under §101" (*In re Bilski*, 545 F.3d 943, 949 (Fed. Cir. 2008)), the Federal Circuit derived a "machine-or-transformation" test:

> A claimed process is surely patent-eligible under §101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing..

Id. at 954 (citations omitted).

In deriving this test, the Federal Circuit overlooked that this Court's precedent declines to limit the broad statutory grant of patent eligibility for "any" new and useful process beyond excluding patents for "laws of nature, physical phenomena, and abstract ideas."

There is no support in this Court's precedent for the Federal Circuit's conclusion that this Court enunciate a definitive "machine or transformation" test for determining the patent eligibility of a claimed process under §101. As a basis for arguing the lack of support, the Washington State Property Law Association concurs with Section II(B) (pages 9-13) of American Intellectual Property Law Association's brief , dated March 2, 2009, of record in this case: "Brief of Amicus Curiae American Intellectual Property Law Association in Support of the Petition for a Writ of Certiorari."

2. The Governing Standard For Whether a Process Is Patent Eligible Subject Matter Under §101 Is Provided by *Chakrabarty* and *Diehr*

Any patent eligibility analysis must start with the statute itself, as codified in §101:

> Whoever invents or discovers *any new* and *useful process*, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

(emphasis added.) At least four terms are of interest in the present analysis: (1) "any" (2) "new" (3) "useful" and (4) "process." This Court's cases help to delineate the boundaries of §101 and shed light on these terms, including *Gottschalk v. Benson*, 409 U.S. 63 (1972) and *Parker v. Flook*, 437 U.S. 584 (1978), with *Diamond v. Chakrabarty*, 447 U.S. 303 (1980) and *Diamond v. Diehr*, 450 U.S. 175 (1981) providing the most apposite and on-point guidance.

3. *Chakrabarty*: "any," "new," and "useful"

In *Chakrabarty*, certiorari was granted to determine whether a live, human-made micro-organism is patentable subject matter under §101. *Chakrabarty*, 447 U.S. at 305. This human-made genetically engineered bacterium was capable of breaking down multiple components of crude oil, and, because of this property, which was possessed by no naturally occurring bacteria, Chakrabarty's invention was valuable in the treatment of oil spills. *Id.*

The novelty requirement in §101[3] addresses the type of subject matter that is eligible for patent protection, subject to the conditions and requirements of Title 35. In *Chakrabarty*, the type of subject matter was "human-made" and "no[t] naturally occurring." *Chakrabarty*, 447 U.S. at 305. In other words, the patentee produced a "new" bacterium with markedly different characteristics from any found in nature so that his discovery was not nature's handiwork, but his own. *Id.* at 310.

The bacterium was also "useful" because it promised more efficient and rapid oil-spill control. This Court explicitly found that the patentee produced a new bacterium "having the potential for significant *utility*." *Id.* (emphasis added). "Utility" was identified with the "treatment of oil spills," as evidenced by the "capabil[ity] of degrading camphor and octane, two compounds of crude oil" resulting in "more efficient and rapid oil-spill control," *Id.* at 305, n.1. Thus, this Court identified the practical utility of the invention as a significant aspect of §101 analysis.

Chakrabarty provided a broad scope for "new" and "useful" inventions,[4] in which the term "any" was integral to §101's requirement for "*any* new and useful process" (emphasis added). In particular, this Court observed that:

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[3] Vis-à-vis the novelty requirement in 35 U.S.C. § 102.

[4] *Chakrabarty* applies not only to the biotechnology field, but extends to all fields in patent law. For example, computer instructions are also "made" by developers and are therefore "new"; they can also be "useful" since they can be instrumental in manipulating hardware components employed for practically useful ends. Thus, computer instructions can be eligible for patent protection. However, whether they are ultimately patentable in view of 35 U.S.C. §§ 102 (novelty), 103 (nonobviousness), and 112 (written description and enablement) is a separate inquiry.

> The subject-matter provisions of the patent law have been cast in broad terms to fulfill the constitutional and statutory goal of promoting "the Progress of Science and the useful Arts" . . . . Broad general language is not necessarily ambiguous when congressional objectives require broad terms.

Id. at 313. In light of this, the term "any" was interpreted to mean that "*anything* under the sun that is made by man" is eligible for patent protection. *Id.* at 309 (*quoting* S. Rep. No. 82-1979, at 5 (1952); H.R. Rep. No. 82-1923, at 6 (1952)) (emphasis added). This statement not only clarified the scope of the term "any" ("anything"), but also the scope of the term "new" ("made by man"). This interpretation of §101 was also based on Committee Reports that accompanied the 1952 Patent Act, informing this Court of Congressional intent of statutory subject matter. *Id.* Thus, *Chakrabarty* more confidently established Congressional intent than either *Gottschalk* or *Flook*, both of which openly solicited Congressional intervention.[5]

This Court previously noted that the scope of §101 extends beyond the particular technologies that legislators may have contemplated at the time of the 1952 Patent Act:

> This Court frequently has observed that a statute is not to be confined to the particular applications contemplated by the legislators.

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[5] *Gottschalk*, 409 U.S. at 72 ("The technological problems tendered in the many briefs before us indicate to us that considered action by the Congress is needed."); *Flook*, 437 U.S. at 595 ("Difficult questions of policy concerning the kinds of programs that may be appropriate for patent protection and the form and duration of such protection can be answered by Congress.").

> . . . This is especially true in the field of patent law. A rule that unanticipated inventions are without protection would conflict with the core concept of the patent law that anticipation undermines patentability. Mr. Justice Douglas reminded that the inventions most benefiting mankind are those that push back the frontiers of chemistry, physics, and the like. Congress employed broad general language in drafting §101 precisely because such inventions are often unforeseeable.

Chakrabarty, 447 U.S. at 315-16 (citations omitted) (internal quotes omitted). Thus, this Court made it clear that §101 is to be construed very broadly.

However, notwithstanding the breadth of §101, as both *Chakrabarty* and later *Diehr* emphasized, it is not without limitation:

> This is not to suggest that §101 has no limits or that it embraces every discovery. The laws of nature, physical phenomena, and abstract ideas have been held not patentable. Thus, a new mineral discovered in the earth or a new plant found in the wild is not patentable subject matter. Likewise, Einstein could not patent his celebrated law that $E = mc^2$; nor could Newton have patented the law of gravity. Such discoveries are "manifestations of . . . nature, free to all men and reserved exclusively to none."

Id. at 309 (citing *Flook*; *Gottschalk*, 409 U.S. at 67; *Funk Brothers Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948); *O'Reilly v. Morse*, 15 How. 62, 112-121 (1854); and *Le Roy v. Tatham*, 14 How. 156, 175 (1853)); *see also Diehr*, 450 U.S. at 185. In short, laws of nature, physical/natural phenomena, and abstract ideas are the exceptions to patent eligibility.[6] Examples of these exceptions include Newtonian gravity (a law of nature), new minerals discovered in the earth (physical/natural phenomena), and mere unapplied mathematical formulae such as binary coded decimal to pure binary conversions (abstract ideas).[7] These are the three traditional categories of exceptions to patent eligibility recognized by this Court, and they should continue to be regarded as the checks on any overbroad interpretation of §101.

4. Diamond v. Diehr: "process"

Following *Chakrabarty*, this Court addressed head-on the eligibility of processes, which are at issue in the present patent application. In *Diehr*, this Court granted certiorari to determine whether a process for curing synthetic rubber which includes in several of its steps the use of (1) a mathematical formula and (2) a programmed digital computer is patent eligible subject matter under §101.

First, this Court found that the patentees did not seek to patent a mathematical formula, but rather sought patent protection for a process of curing synthetic rubber. Even though the process employed the well-known Arrhenius equation, it did not preempt the use of that equation. The process merely foreclosed the use of the Arrhenius equation in conjunction with all the other claimed steps. In other words, the use of the Arrhenius equation in the claim was not an unapplied mathematical formula; rather, it was part of an application to cure rubber.

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[6] In *Diehr*, this Court characterized the exclusion from patent protection "laws of nature, *natural* phenomena, and abstract ideas." *Diehr*, 450 U.S. at 185 (emphasis added).

[7] *Gottschalk*, 409 U.S. at 68.

Second, even though a computer was not needed in the process of curing natural or synthetic rubber, if the use of the computer incorporated in the claimed process significantly lessened the possibility of overcuring or undercuring, the process as a whole did not become unpatentable subject matter. *Diehr*, 450 U.S. at 187. Thus, the use of a well-known formula did not render claimed subject matter patent-ineligible, and a computer was an integral part of such subject matter.

> It is inappropriate to dissect the claims into old and new elements and then to ignore the presence of the old elements in the analysis. ... This is particularly true in a process claim because a new combination of steps in a process may be patentable even though all the constituents of the combination were well known and in common use before the combination was made.

Id. At 188. Thus, although the process claim simply employed a well-known formula and the use of a digital computer, as a whole it was deemed patent eligible.

When actually examining the process claim itself, as a starting point, this Court looked to past case law for a definition of a "process":

> A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing

Id. at 183 (quoting *Cochrane v. Deener*, 94 U.S. 780, 787-788 (1877)). At its most general level, a process is described as a mode of treatment of certain materials to produce a given result, or an act, or a series of acts performed upon a subject matter. This definition provides a sufficient basis for identifying a process.

The remaining language, namely, "to be transformed and reduced to a different state or thing" provides an exemplary scenario of how such a process can be carried out.

> Transformation and reduction of an article to a different state or thing is the *clue* to the patentability of a process claim that does not include particular machines.

Gottschalk, 409 U.S. at 70 (internal quotes omitted) (emphasis added); *Diehr*, 450 U.S. at 183. Thus, instead of being a definitive test, transformation at most provides a clue to, or is an indicium of, patent eligibility, and as such it may provide a sufficient condition for patent eligibility, but it is not a necessary one.

This Court appeared to preclude any argument to the contrary:

> It is argued that a process patent *must* either be tied to a particular machine or apparatus or *must* operate to change articles or materials to a different state or thing. We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.

Gottschalk, 409 U.S. at 71 (internal quotes omitted) (emphasis added). Thus, this Court appeared to hold that transformation and tying to a machine provide mere indicia of patent eligibility, but they are not requirements thereof.

In *Diehr*, this Court examined how an "application" of an algorithm impinged on patent eligibility. Citing to *Gottschalk*, this Court noted:

> The sole *practical application* of the [binary-coded decimal to pure binary] algorithm was in connection with the programming of a general purpose digital computer.

Diehr, 450 U.S. at 185-86 (emphasis added). The concern expressed by this Court in *Gottschalk* was that if the claimed invention issued as a patent, it would practically wholly pre-empt the mathematical formula and would result in a patent on the algorithm itself. *Benson*, 409 U.S. at 72. Second, this Court noted that *Flook* presented a similar situation, where method claims were drawn to computing an alarm limit number, and the application sought to protect a formula for computing this number. *Diehr*, 450 U.S. at 186.

In contrast to both *Gottschalk* and *Flook*, the *Diehr* invention did not seek to patent a mathematical formula, but rather it sought patent protection for a process of curing synthetic rubber. *Diehr*, 450 U.S. at 187. Specifically, in *Diehr* the patentees did "not seek to pre-empt the use of that equation. Rather, they [sought] only to foreclose from others the use of that equation in conjunction with all of the other steps in the claimed process." *Id.* These cases appear to lead to the conclusion that *Gottschalk* and *Flook* inventions did not recite enough practical utility, whereas *Diehr* did. *Gottschalk* and *Flook* were directed to algorithms in the abstract, in contrast to *Diehr* that recited a practically useful invention that cured synthetic rubber.

5. Claims that are compliant with §101 Are Subject to Other Requirements under the Statutes, including §§102, 103, and 112.

The statute requires that even if claims are patent-eligible under §101, they are still "subject to the conditions and requirements of this [35 U.S.C.] title," including §§102 (novelty) and 103 (nonobviousness). Thus, the breadth of §101 patent eligibility has to be counterbalanced by other hurdles to patentability found in §§102, 103, and 112 (written description and enablement), so alleviating any concerns patentability of overbroad and inappropriate subject matter.[8]

For example, *Diehr* found that the claimed process at issue was patent-eligible under §101 yet noted that "it may later be determined that the respondents' process is not deserving of patent protection because it fails . . . novelty under §102 or nonobviousness under §103." *Diehr*, 450 U.S. at 191. The same holds true for §112. The process claim in *Diehr* cleared the §101 hurdle because it was the type of subject matter eligible for patentability (being "new and useful"), yet it could have been rejected in view of prior art processes used in the rubber-curing industry that either anticipated or rendered the process claim obvious.

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[8] Justice Kennedy's concurrence in *eBay Inc.* noted the "potential vagueness" and "suspect validity" of some business method patents. However, vagueness is perhaps best addressed under § 112 of the statute and suspect validity is perhaps best addressed under §§ 102 and 103 of the patent statute. *eBay Inc. v. MercExhcange, LLC*, 547 U.S. 388, 397 (2006) (Kennedy, J., concurring).

The process in *Diehr* could have failed for lack of written description and enablement. That is, if the application in *Diehr* did not convey with reasonable clarity to those skilled in the art that, as of the filing date sought, the inventor was in possession of the claimed invention, it would have failed the written description requirement. Similarly, if it did not teach those skilled in the art how to interface the digital computer with the Arrhenius equation (i.e. how to make and use the invention) without undue experimentation, it would have failed under enablement. Thus, the *Diehr* process was found patent eligible, at least in part, because the Court realized that §101 is only one of the counterbalancing hurdles that include §§102, 103, and 112, and that §101 should remain open to a broad array of patent-eligible subject matter.

These patentability hurdles guard against any overbroad claims that either cannot be supported by the application itself or that claim already anticipated or obvious subject matter. Thus, despite the breadth of §101, other sections of Title 35 provide a restricting counterbalance.

B. The Federal Circuit "machine or transformation" test contradicts the congressional intent of 35 U.S.C. §273

1. The Federal Circuit has not followed this Court's precedential deference to Congress on the Reach of §101.

The U.S. Constitution unequivocally give Congress the Power:

> To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries;

U.S. Constitution, Article I, Section 8. As the foregoing passage makes clear, Congress has the power to pass laws governing patentable subject matter. Congress has exercised that authority in passing 35 U.S.C. §101. (Patent Act, July 19, 1952 , c. 950, 66 Stat. 792, *codified as* Title 35 of the United States Code).

This Court has consistently recognized Congressional authority with respect to the patent laws. Facing the issue of the scope of §101 in the context of genetically modified bacteria, this Court stated in *Chakrabarty* that:

> The choice we are urged to make is a matter of high policy for resolution within the legislative process after the kind of investigation, examination, and study that legislative bodies can provide and courts cannot.

Id. at 317; see *Parker v. Flook*, 437 U.S. 584, 595 (1978)

> Difficult questions of policy concerning the kinds of programs that may be appropriate for patent protection and the form and duration of such protection can be answered by Congress on the basis of current empirical data not equally available to this tribunal.

In the face of new technology leading to genetically modified plants, in *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred International, Inc.*, 534 U.S. 124 (2001), this Court described §101 as a "dynamic provision designed to encompass new and unforeseen inventions." *Id.* at 133. The Court stated: "As in *Chakrabarty*, we decline to narrow the reach of §101 where Congress has given us no indication that it intends this result." *Id.* at 145-46. This Court also stated that "Congress plainly contemplated that the patent laws would be given wide scope," *Id.* at 130 (quoting Chakrabarty, 447 U.S. at 308), and that the language of §101 is "extremely broad." *Id.*

In response to this Court's decision in *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518 (1972), Congress also amended 35 U.S.C. §271 in 1984. (*See* S. Rep. No. 98–663, pp. 2–3 (1984) describing §271(f) as "a response to the Supreme Court's 1972 *Deepsouth* decision which interpreted the patent laws not to make it an infringement where the final assembly and sale is abroad.) Subsequently, in *Microsoft Corp. v. AT&T*, 550 U.S. 437 (2007), this Court stated:

> Having attended to the gap made evident in *Deepsouth*, Congress did not address other

> arguable gaps: Section 271(f) does not identify as an infringing act conduct in the United States that facilitates making a component of a patented invention outside the United States; nor does the provision check "suppl[ying] ... from the United States" information, instructions, or other materials needed to make copies abroad. Given that Congress did not home in on the loophole AT&T describes, and in view of the expanded extraterritorial thrust AT&T's reading of §271(f) entails, our precedent leads us to leave in Congress' court the patent-protective determination AT&T seeks.

Id. at 450. As support, this Court cited *Sony Corp. of America v. Universal City Studios, Inc.*, 464 U.S. 417 (1984):

> In a case like this, in which Congress has not plainly marked our course, we must be circumspect in construing the scope of rights created by a legislative enactment which never contemplated such a calculus of interests.

Id. at 431.

Congress devised the Hatch-Waxman laws to provide rights to account for the delay in approving drugs through the FDA. More currently, Congress is addressing issues related to patents covering biological molecules. Congressional committees are devoting efforts to creating "follow-on biologics" legislation to regulate this new industry. Congress is not contemplating excluding biological molecules from patent protection.

Congress has been debating a significant rewrite of the patent laws for the past several years. 111 S. Rpt. 18, 2009 H.R. 1260. Noticeably absent from that debate is any discussion of changing § 101 of the patent statutes.

Courts are free to interpret statutes passed by Congress and have done so. As illustrated above with respect to the *Deepsouth* decision, courts have stepped in when the statute was not clear. However, where courts have decided issues that were not clear from existing law, Congress has not hesitated to clarify. The *Deepsouth* decision is one example. Additionally, in *In re Bass*, 59 CCPA 1342 (CCPA 1973) the appellate court found that 35 U.S.C. § 103, as written, resulted in the rejection of a patent to a research organization team in view of subject matter previously developed by some of the members of the team. Congress responded. Congress amended the patent statutes to preclude rejections under prior art owned by the same research organization. 35 U.S.C. §103(c) (1984).

Years later, the Federal Circuit found that §103(c), as written, meant that secret prior art exchanged under confidentiality agreements between companies can used as evidence to render an invention obvious. *OddzOn Products v. Just Toys* 122 F3d 1396 (1997). Congress again responded and passed the CREATE act to preclude rejections over information arising under a joint research agreement between two research organizations. 35 U.S.C. § 103(c)(2) (1997).

The issue presently before this Court has its origins in the Federal Circuit's opinion in *State Street*. The Federal Circuit held that under §101 there were *no exceptions* to patentable subject matter. At the time, this decision was controversial because many had believed that business methods were excluded from patent protection. Congress again acted. Congress chose to keep §101 open and to enact other legislation. As a direct result of *State Street*, Congress enacted 35 U.S.C. §273:

> The first inventor defense will provide the financial services industry with important, needed protections in the face of the uncertainty presented by the Federal Circuit's decision in the State Street case. In *State Street*, the Court did away with the so-called "business methods" exception to statutory patentable subject matter. Consequently, this decision has raised questions about what types of business methods may now be eligible for patent protection. In the financial services sector, this has prompted serious legal and practical concerns. ...
>
> The first inventor defense strikes a fair balance between patent law and trade secret law.

146 Cong Rec. S. 14986, 14994 (1999) (citation omitted). Congress explicitly recognized that business methods patents were eligible for patent protection. It responded to *State Street*, not by amending §101 to clarify and narrow its scope (as it had done in the case of §103), but by providing rights to those who otherwise would be excluded from practicing patented business methods.

Congress enacted §273 while recognizing that patent law should encourage innovation, not create barriers to innovation:

> With regard to Title II, the First Inventor Defense [the House bill leading to §273] I have always held that we simply cannot champion trade secret protection over patent protection for clearly

> patentable subject matter. We cannot betray our Founding Fathers by abandoning the foundation upon which our patent system is based. We cannot openly advocate secrecy when our patent system calls for us to vigorously promote the progress of science through the sharing of critical technology.

145 Cong Rec H 6929, 6943-44 (1999). To paraphrase the *AT&T* Court, having attended to the gap made evident in *State Street Bank*, Congress did not address other arguable gaps in § 101.

2. The Federal Circuit decision in Bilski contradicts the Congressional intent of §273.

In *Bilski*, the Federal Circuit erred by not considering the intervening passage of §273. Whether or not the Federal Circuit correctly decided the scope of §101 in *State Street*, after the passage of §273, the court was no longer free to reconsider its *State Street* decision without considering the impact of Congressional action and the passage of §273.

Section 273 makes clear that Congress intended that a wide scope of inventions are patent eligible, and not simply those methods that are tied to a machine or that transform an article to a different state or thing:

> It shall be a defense to an action for infringement under section 271 of this title with respect to any subject matter *that would otherwise infringe one or more claims for a method* in the patent being asserted against a person.

35 U.S.C. §273(b)(1) (emphasis added).

The legislative history of §273 supports the broad definition of patents involving business methods. Congress tacitly viewed inventions involving business methods as patent eligible under §101 as a natural effect of the *State Street* decision.

> As used in this legislation, the term "method" is intended to be construed broadly. The term "method" is defined as meaning "a method of doing or conducting business." thus, "method" includes any internal method of doing business, a method used in the course of doing or conducting business, or a method for conducting business in the public marketplace. It includes a practice, process, activity, or system that is used in the design, formulation, testing, or manufacture of any product or service. The defense will be applicable against method claims, as well as the claims involving machines or articles the manufacturer used to practice such methods (i.e., apparatus claims). New technologies are being developed every day, which include technology that employs both methods of doing business and physical apparatus designed to carry out a method of doing business. The first inventor defense is intended to protect both method claims and apparatus claims.

146 Cong Rec. S., at 14994. Congress intended to interpret business methods broadly:

> The term "method" should be interpreted broadly so that it includes any "method of doing or conducting business," including a process. The method that is the subject matter of the defense may be an internal method of doing business, a method used in the course of doing or conducting business, or a method for conducting business in the public marketplace. It can be a method used in the design, formulation, preparation, application,

> testing, or manufacture of a product or service. A method is any systematic way of accomplishing a particular business goal. The defense should be applicable against patent infringement claims regarding methods, and to claims involving machines or articles of manufacture used to practice such methods (if such apparatus claims are included in the asserted patent). In the context of the financial services industry, methods would include financial instruments (e.g., stocks, bonds, mutual funds), financial products (e.g., futures, derivatives, asset-backed securities), financial transactions, the ordering of financial information, any system or process that transmits or transforms information with respect to eventual investments or financial transactions.

Id. at 15016. Many of the methods listed by Congress involve transactions involving financial instruments or financial products in ways that do not involve machines in the regular course. The legislative history of §273 lacks any statement or discussion that would contradict this broad view of patent eligibility.

The definition of process used to derive the Federal Circuit's "machine or transformation" test contradicts the definition of business methods used in the context of §273. Congress understood that inventive technology advanced beyond its existing limits, and this resulted in a need for flexibility in the law to permit new inventions access to patent rights. Congress defined business methods broadly to embrace these technological advances and their relative importance to the financial industry. The Federal Circuit did not use the definition of business method relied upon by Congress. Rather, it arrived at its own definition by an exegetical analysis of the word "process," going back to English law of 1663. In this respect, the Federal Circuit's definition of a patentable method contradicts the practical definition relied upon by Congress. In construing statutory law, a definition cannot be used in one way while defining the scope of patent eligible subject matter, and in a different way during patent enforcement when construing entitlement to a defense under §273. If the Federal Circuit's definition differs, it can only be that the Federal Circuit defines patentable business method patents, i.e., those falling within §273, more narrowly than Congress intended.

The Federal Circuit's "machine or transformation" test contradicts Congressional intent by potentially stifling the advance of science and the technical arts, including patents for methods of conducting business. This new test has a suppressive effect on patent eligibility relating to technical inventions of certain industries, contradicting Congressional intent to leave §101 open to broadly encompass new technologies.

3. The Federal Circuit decision upsets the balance between trade secrets and patents created by §273.

Congress enacted §273 while recognizing that patent law should encourage innovation, not create barriers to innovation:

> With regard to Title II, the First Inventor Defense [the House bill leading to §273] I have always held that we simply cannot champion trade secret protection over patent protection for clearly patentable subject matter. We cannot betray our

> Founding Fathers by abandoning the foundation upon which our patent system is based. We cannot openly advocate secrecy when our patent system calls for us to vigorously promote the progress of science through the sharing of critical technology.

145 Cong Rec H 6929, 6943-44 (1999).

Congress sought to provide rights to inventors holding trade secrets, who believed that their inventions were not eligible for patent protection:

> Before the State Street Bank and Trust case as to which in 1998 the U.S. Supreme Court upheld the Court of Appeals for the Federal court, it was universally thought that methods of doing conducting business were not patentable items.
>
> Before that case, everybody would keep that secret and never tried to patent it. In recognition of this pioneer clarification in the law by that case, we felt that those who kept their business practices secret had an equitable cause not to be stopped by someone who subsequently reinvented the method of doing or conducting the business or obtaining a patent.

Id. at 6947.

The intent of Congress while enacting §273 was to balance the interests of patent owners and trade secret owners. Congress wanted to maintain patent eligibility for new technologies, particularly technologies relating to process patents. It resolved the tension between these by providing additional rights to trade secret owners relating to business methods.

In enacting §273, Congress understood that it was forcing inventors to make information public:

> We cannot openly advocate secrecy when our patent system calls for us to vigorously promote the progress of science through the sharing of critical technology.

145 Cong Rec H 6929, 6943-44 (1999). Relying on *State Street* and §273, thousands of patent applications have been filed, many issuing as patents. The Federal Circuit's "machine or transformation" test changes the balance in a way that Congress did not intend and in effect punishes those who, relying on Congress, chose to make public that which they would have otherwise kept secret.

The effect of the Federal Circuit's newly minted test is to shift those inventions already published as patent applications into the category of patent ineligible subject matter. Rather than relying on principles of preemption of fundamental principles, now inventors must rely on the Federal Circuit's "machine or transformation" test. This test has excludes patent protection not only for business method patents, but also for inventions in various industries. This test raises a difficult question of policy concerning the kinds of programs that may be appropriate for patent protection, one this Court identified that can be answered by Congress on the basis of current empirical data not available to the Courts. The Federal Circuit produced an unfair result. Those companies that relied on *State Street* and §273 who have disclosed their trade secrets in good faith. The Federal Circuit's *Bilski* decision effectively abrogates patent rights of these inventors after they revealed valuable trade secrets to the public. This unfairly injures these companies and others who have been awarded patents based on previous law.

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V. CONCLUSION

For the reasons set forth above, WSPLA respectfully submits that the governing standard regarding when a process is patent eligible under §101 is established in *Chakrabarty* and *Diehr*. A process should be understood to entail an act or a series of acts performed upon a subject matter, or a mode of treatment of certain materials to produce a given result. When considered as a whole, a process has to be new and useful in that it must be man-made and not exist in nature, and it must be practically useful. Such a process does not have to result in a physical transformation or be tied to a machine because such provisions are mere indicia of patent eligibility.

Respectfully submitted

Michael J. Swope
President
Washington State Patent Law
Association

Peter J. Knudsen
Counsel of Record
Woodcock Washburn LLP
999 Third Avenue
Suite 3600
Seattle WA 98104
206-332-1390

August 5, 2009

Certificate of Service

I, Erika Eidsmoe, am a legal secretary for the law firm of Woodcock Washburn LLP, 999 Third Avenue, Suite 3600, Seattle, Washington. I hereby certify that on the fifth day of August, 2009, I caused to be served via overnight courier upon the following, two (2) true and correct copies BRIEF OF *AMICUS CURIAE* WASHINGTON STATE PATENT LAW ASSOCIATION:

J. Michael Jakes
Finnegan Henderson Farabow
Garrett & Dunner LLP
901 New York Avenue, NW
Washington, DC 20001-4413
Attorneys for Petitioners, Bernard L. Bilski and Rand A Warsaw

Elena Kagan
Acting Solicitor
United States Department of Justice
950 Pennsylvania Avenue, N.W.
Washington, DC 20530-0001
Attorney for John J. Doll, Acting Under Secretary of Commerce for Intellectual Property and Acting Director, Patent and Trademark Office

I declare under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

DATED this fifth day of August, 2009, at Seattle, Washington.

Erika Eidsmoe

AMICUS
CURIAE
BRIEF

Supreme Court, U.S.
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No. 08-964

IN THE

Supreme Court of the United States

BERNARD L. BILSKI AND RAND A. WARSAW,
Petitioners,

v.

DAVID J. KAPPOS, SECRETARY OF COMMERCE FOR
INTELLECTUAL PROPERTY AND DIRECTOR, UNITED
STATES PATENT AND TRADEMARK OFFICE,
Respondent.

On Writ of Certiorari to the
United States Court of Appeals
for the Federal Circuit

BRIEF OF *AMICUS CURIAE* WILLIAM MITCHELL COLLEGE OF LAW INTELLECTUAL PROPERTY INSTITUTE IN SUPPORT OF RESPONDENT

R. CARL MOY
Counsel of Record
JAY ERSTLING
William Mitchell College of Law
Intellectual Property Institute
875 Summit Avenue
Saint Paul, MN 55105
(651) 290-6344

October 2, 2009

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INTEREST OF *AMICUS CURIAE*[1]

The Intellectual Property Institute is an entity within William Mitchell College of Law. The mission of the Institute is to foster and protect innovation through education, research, and service initiatives. Among its activities, the Institute advocates for the responsible development and reform of intellectual property law, including patent laws and the patent system of the United States. A purpose of the Institute is to raise issues and arguments in light of the public interest and the best interests of the patent system as a whole. The Institute has no financial interest in any of the parties to the current action.

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[1] Pursuant to Supreme Court Rule 37.6, no counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than *amicus curiae* or its counsel made a monetary contribution to its preparation or submission. Additionally, counsel for both parties have consented to the filing of this brief, and their consents have been filed with the Clerk of this Court.

SUMMARY OF ARGUMENT

Bilski's application defines his invention very simply, as a financial method in which all the steps have the same character. In particular, he has claimed his method as divorced from any machine or apparatus. As a result, this Court should limit its consideration in this case to whether such financial methods are patentable subject matter, under section 101 of the patent statute.[2] This Court should decline the invitation, from various *amici*, to address the patentability of inventions that are claimed as a mixture of both statutory and non-statutory elements.

The proper definition of statutory subject matter under United States patent law cannot be obtained by parsing the exact language of section 101. Instead, the correct approach is to look to the policies that underlie Congress's decision to make inventions patentable.

A long line of cases from this Court, stretching back into the 19th Century, demonstrate that the patent system is designed to foster the development of applied technology. Therefore, to be consistent with this long-held view, patenting should properly extend to subject matter that is both an artificial creation, and which utilizes a law of nature. Adopting this view would render untraditional types of inventions, such as Bilski's claimed invention, unpatentable, but would leave most of the traditional law relating to the statutory subject-matter requirement intact. It would also modernize the law relating the patentability of processes, overturning *Cochrane v. Deener*.[3]

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[2] 35 U.S.C. § 101.

ARGUMENT

I. This Court Should Not Address Inventions Claimed as a Mixture of Statutory and Non-Statutory Elements

1. The facts of Bilski's appeal are relatively simple. Bilski's application claims his invention as a method of managing the business risks associated with the sale of interests in a commodity.[4] The claims describe his invention entirely as steps of a financial method, divorced from any apparatus. They do not tie the method to any particular physical implementation, nor are they couched in terms of a physical structure through which the method can be performed.[5]

2. This is important because, conceptually, developing a system of rules for processing claimed inventions under the patent statute's subject-matter requirement involves deciding two questions in

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[3] *Cochrane v. Deener*, 94 U.S. 780 (1876).

[4] Pet. App. 2a-3a. *See* J.A. 10-23 (U.S. Patent Application No. 08/833,892).

[5] *See id.*

succession. The first question is: which fields of activity are to be considered statutory, and thus impacted by the patent incentive? Once the invention has been categorized into a particular field, it allows the particular invention to be judged as statutory or not.

The second question is: how is a particular claimed invention assigned to these fields? This is trivial when the claimed invention's individual elements are all of one character, either statutory or not. An invention that consists entirely of statutory elements is undoubtedly statutory.[6] An invention that consists entirely of non-statutory elements is undoubtedly non-statutory.[7]

Unlike Bilski's application, where the inventor has chosen to claim the invention as a combination of both statutory and non-statutory elements, the task of placing the particular invention into a field of activity is very complex. The question is conceptually intricate and raises concerns that go well beyond simply characterizing an entire field of activity as either statutory or not.[8] As a broad analogy, the question is similar to dealing with classifying mixed-character items into other binary schemes, such as law versus fact.[9]

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[6] *See, e.g., Gottschalk v. Benson,* 409 U.S. 63 (1972).

[7] *See, e.g., Diamond v. Chakrabarty,* 447 U.S. 303 (1980); *J.E.M. AG Supply, Inc. v. Pioneer Hi-Bred Intern., Inc.,* 534 U.S. 124 (2001).

[8] *See* Letter from Alison Brimelow, European Patent Office President, to Peter Messerli, Chairman of the Enlarged Board of Appeal of the European Patent Office (Oct. 22, 2008), *available at*

3. The cases that address whether an invention is statutory subject matter can therefore be separated into two groups: those whose facts present only the first question and those that require addressing the second. Recent examples of decisions in the first group are *Gottschalk v. Benson,*[10] *Diamond v.*

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http://documents.epo.org/projects/babylon/eponet.nsf/0/B89D95BB305AAA8DC12574EC002C7CF6/$File/G3-08_en.pdf (referring four questions involving mixed-character inventions to Enlarged Board of Appeal of the European Patent Office).

See also, e.g., Jurgen Betten, *Emerging Issue: Patentability of Software in Europe: The German Perspective (Part 1),* 13 Computer Lawyer 1 (1996); European Patent Office, Examination Guidelines, ch. IV, 2 (et seq.) (May 2005) (technical character vs. technical effect).

Compare, e.g., 2 R. Carl Moy, *Walker on Patents* § 5:80 (4th ed. 2008).

[9] *See, e.g., Dobson v. Commissioner of Internal Revenue,* 320 U.S. 489, 500-01 (1943); *Pullman-Standard v. Swint,* 456 U.S. 273, 290 n.19 (1982) (applying nomenclature of "mixed question of law and fact"); *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996).

See also Weiner, *The Civil Jury Trial and the Law-Fact Distinction,* 54 Calif. L. Rev. 1867 (1966).

See generally 2 R. Carl Moy, *Walker on Patents* §§ 5:42 *et seq.* (4th ed. 2008).

[10] *Gottschalk v. Benson,* 409 U.S. 63 (1972) (statutory status of numerical method; claimed invention non-statutory).

Chakrabarty,[11] and *J.E.M. AG Supply, Inc. v. Pioneer Hi-Bred Intern., Inc.*[12] Recent decisions of this Court in the second group include *Parker v. Flook,*[13] *Diamond v. Diehr,*[14] and *Laboratory Corp. of America Holdings v. Metabolite Laboratories, Inc.*[15]

4. This analysis is noteworthy because Bilski's appeal falls squarely within the first category. Every

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[11] *Diamond v. Chakrabarty,* 447 U.S. 303 (1980) (statutory status micro-organism; claimed invention statutory).

[12] *J.E.M. AG Supply, Inc. v. Pioneer Hi-Bred Intern., Inc.,* 534 U.S. 124 (2001) (statutory status of sexually reproduced plant; claimed invention statutory).

[13] *Parker v. Flook,* 437 U.S. 584 (1978) (statutory status of invention claimed as combination of physical and mathematical steps).

[14] *Diamond v. Diehr,* 450 U.S. 175 (1981) (statutory status of invention claimed as combination of physical and mathematical steps).

[15] *Laboratory Corp. of America Holdings v. Metabolite Laboratories, Inc.,* 548 U.S. 124 (2006).

See also, e.g., In re Comiskey, 554 F.3d 967 (Fed. Cir. 2009) (statutory status of machine performing steps of arbitration system); *In re Alappat,* 33 F.3d 1526 (Fed. Cir. 1994) (statutory status of physical apparatus performing mathematical calculation); *In re Beauregard,* 53 F.3d 1583 (Fed. Cir. 1995) (statutory status of invention claimed as combination of physical structure and printed matter); *State Street Bank & Trust Co. v. Signature Financial Group, Inc.,* 149 F.3d 1368 (Fed Cir. 1998) (statutory status of invention claimed as physical apparatus performing financial calculation).

claimed element in Bilski's patent is a step in a method of calculating and managing financial risk. Deciding his case requires only the determination of whether such financial methods are statutory or not. The better view, as explained later in this brief, is that these financial methods are not statutory and, as a result, Bilski's claimed invention is non-statutory. Even if this Court decides otherwise, there would be no need to address the categorization of mixed-character inventions.

Well-accepted principles of judicial restraint call for this Court to address only the question of what fields of activity should be considered statutory, and not the further question of how to treat inventions whose statutory character is mixed.[16] Specifically, this Court should decline the suggestions by some *amici* that is be drawn into these further discussions.[17] Instead, these discussions should be left to future cases in which the question of categorizing inventions of a mixed character is actually present.

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[16] *See, e.g., Morse v. Frederick,* 551 U.S. 393, 431 (2007) (Alito, J., concurring) (quoting *PDK Labs., Inc. v. Drug Enforcement Admin.,* 362 F.3d 786, 799 (D.C. Cir. 2004) (Roberts, J., concurring in part and concurring in judgment)); *Church of Scientology of Calif. v. U.S.,* 506 U.S. 9, 12 (1992) (quoting *Mills v. Green,* 159 U.S. 651, 653 (1895)); *North Carolina v. Rice,* 404 U.S. 244, 246 (1971) (cited with approval in *DeFunis v. Odegaard,* 416 U.S. 312, 316 (1974)); *Carducci v. Regan,* 714 F.2d 171, 177 (D.C. Cir. 1983) (Scalia, J.).

See also, e.g., Stevens, *Some Thoughts on Judicial Restraint,* 66 Judicature 177, 183 (1982)

[17] *See, e.g.,* Brief of Caris Diagnostics, Inc., *Amicus Curiae* in Support of Petitioners, at 18; Brief of Entrepreneurial Software Companies, *Amicus Curiae* in Support of Petitioner, at 19; Caris

II. Statutory Subject Matter Should Extend Only to Applications of Technology

A. Statutory subject matter cannot be defined by parsing the exact language of section 101.

1. The legal definition of statutory subject matter cannot be understood by parsing the individual words of the patent statute's section 101.[18] Instead, the current language, which refers to any "process, machine, manufacture, or composition of matter," primarily reflects Congress's decision to continue language that was already long-standing when the

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Diagnostics, Inc., *Amicus Curiae* in Support of Petitioners, at 18; Brief of Fédération Internationale Des Conseils En Propriété Industrielle as *Amicus Curiae* in Support of Neither Party; at 12; Caris Diagnostics, Inc., *Amicus Curiae* in Support of Petitioners, at 18; Brief of Intellectual Property Owner's Association as *Amicus Curiae* in Support of Neither Party, at 19; Brief of Monogram Biosciences *et al., Amicus Curiae* in Support of Neither Party at 31; Caris Diagnostics, Inc., *Amicus Curiae* in Support of Petitioners, at 18; Brief of Professor Lee A. Hollaar and IEEE-USA as *Amicus Curiae* in Support of Affirmance, at 32.

[18] 35 U.S.C. § 101.

patent statute was codified in 1952.[19] The immediately preceding provision, section 4886 of the Revised Statutes, employed the same language, with the exception that "process" had not yet replaced the earlier term "art."[20] The language in section 4886 repeated verbatim the wording of section 24 of the Patent Act of 1870,[21] which itself repeated verbatim the language of section 6 of the Patent Act of 1836.[22]

It is quite clear that in re-enacting this language in 1952, Congress did not intend to supply a free-standing definition of statutory subject matter that could be understood simply from reading the statutory text. By 1952 the language had been interpreted through many judicial decisions, including many decisions of this Court.[23] By re-enacting the statutory language that already existed, Congress plainly signaled its intent to carry forward the body of case law interpretations that were already in place.

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[19] *See* Patent Act of 1952, Pub. L. No. 82-593, ch. 950, 82nd Cong., 2nd Sess., 66 Stat. 792 (July 19, 1952).

[20] Rev. Stat. § 4886.

[21] *See* section 24, Patent Act of 1870, 16 Stat. 198 (1870).

[22] *See* section 6, Patent Act of 1836, 5 Stat. 117 (1836).

[23] *See, e.g., Le Roy v. Tatham,* 55 U.S. 156 (1852); *O'Reilly v. Morse,* 56 U.S. 62, 130 (1853); *Corning v. Burden,* 56 U.S. 252 (1853); *Burr v. Duryee,* 68 U.S. 531 (1863); *Tilghman v. Mitchell,* 86 U.S. 287 (1873); *Cochrane v. Deener,* 94 U.S. 780 (1876); *Tilghman v. Proctor,* 102 U.S. 707 (1880); *Dolbear v. American Bell Tel. Co.,* 126 U.S. 1, 553 (1888).

Indeed, the legislative history confirms that the one relevant change Congress did make – substituting "process" for "art" – was intended to make the statutory language conform to the existing case law precedents even more closely.[24]

2. Leading commentators have asserted that the resulting statutory language does not supply separate and discrete categories, but instead reflects an attempt to capture the concept of statutory subject matter generally. Pasquale Federico, the main author of the 1952 statute, asserted that while "[t]he four terms used . . . are often referred to as the four statutory categories of subject matter," "[m]y own view is to regard them collectively as somewhat overlapping expressions . . . ."[25] Glascock and Stringham, commenting on section 4886 of the

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[24] *See* S. Rep. No. 1979, 82nd Cong., 2nd Sess., 5 (1952); H. R. Rep. No. 1923, 82nd Cong., 2nd Sess., 6 (1952), U.S. Code Cong. & Admin. News 1952, pp. 2394, 2399.

See also Diamond v. Diehr, 450 U.S. 175, 182, 184 (1981) ("Although the term 'process' was not added to 35 U.S.C. § 101 until 1952 a process has historically enjoyed patent protection because it was considered a form of 'art' as that term was used in the 1793 Act." "Analysis of the eligibility of a claim of patent protection for a 'process' did not change with the addition of that term to § 101.").

See generally also Pasquale J. Federico, *Commentary on the New Patent Act,* reprinted in 75 JPTOS 163, 175-78 (Special Issue 1993).

[25] Pasquale J. Federico, *Section 101: Subject Matter for Patents,* in *The Law of Chemical, Metallurgical and Pharmaceutical Patents* 53, 58 (1967).

Revised Statutes, asserted that "[i]n the statute there is no basis for assuming that these represent four separate compartments of invention. Rather does the use of the four terms represent an effort to indicate the general industrial boundary of the single field of patentable invention."[26]

3. Decisions of this Court since 1952 are in general agreement. They repeatedly recognize various restrictions on the definition of statutory subject matter beyond those that reside in the express language of the statute.[27] As the Supreme Court stated in *Parker v. Flook,* "[t]he plain language of § 101 does not answer the question."[28] Instead, the Court repeatedly has recognized that statutory subject matter can be absent even where the statutory language is nominally met.[29]

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[26] Eustace Glascock & Emerson Stringham, *Patent Law* 22 (1943) (referencing R.S. § 4886).

[27] *See, e.g., Gottschalk v. Benson,* 409 U.S. 63, 70 (1972); *Diamond v. Diehr,* 450 U.S. 175, 185 (1981) ("This Court has undoubtedly recognized limits to § 101 and every discovery is not embraced within the statutory terms.").

[28] *Parker v. Flook,* 437 U.S. 584, 589 (1978).

[29] *See, e.g., Parker v. Flook,* 437 U.S. 584, 589 (1978); *Gottschalk v. Benson,* 409 U.S. 63, 70 (1972).

B. This Court has consistently viewed the patent system as directed to applications of technology.

1. Logically, therefore, the test for deciding whether a claimed invention is statutory should be an orderly implementation of the policy objectives that underlie the statutory subject-matter requirement. Indeed, the Supreme Court has long stated the criterion for statutory subject-matter eligibility in such terms. Statements employing this approach appear as early as 1852,[30] and since then have appeared regularly since.[31] Certainly, the proposition that the correct interpretation of section 101 is one that serves the overall function of the patent system is not radical or new by any means.

2. What, then, are the underlying policy objectives of the statutory subject matter requirement in section 101? The current state of thought is that there are potentially three. The first objective can be discarded in connection with section 101 quickly. It has been observed, correctly, that entire fields of technological subject matter can be excluded from patentability to shield society from situations where patent control

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[30] *See Le Roy v. Tatham,* 55 U.S. 156 (1852).

[31] *See, e.g., Rubber-Tip Pencil Co. v. Howard,* 87 U.S. 498 (1874); *Mackay Radio & Telegraph Co. v. Radio Corporation of America,* 306 U.S. 86 (1939); *Funk Bros. Seed Co. v. Kalo Inoculant Co.,* 333 U.S. 127 (1948); *Gottschalk v. Benson,* 409 U.S. 63 (1972).

would result in social costs that are unacceptably high.[32] While this type of exclusion is commonplace in foreign patent laws, it is generally accepted that essentially no such categorical exclusions exist in the patent laws of the United States, but for a few minor exceptions.[33]

3. Another assertion is that the statutory subject-matter requirement has been used to police instances of extreme overbreadth, *i.e.*, instances where the claim under consideration has used words of such extreme generality as to encompass all means of achieving some beneficial result. The objection has been that the resulting exclusive right would grossly over-compensate the patentee and stifle future research. The early onset of this concern can be seen

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[32] *See, e.g.*, Machlup, Fritz, An Economic Review of the Patent System, Study no. 15 of the Subcommittee on Patents, Trademarks, and Copyright of the Committee of the Judiciary of the United States Senate, 85th Cong., 2nd Sess., at 8-9, 55 (1958).

[33] *See generally, e.g.*, Pasquale J. Federico, *Section 101: Subject Matter for Patents*, in *The Law of Chemcial, Metallurgical and Pharmaceutical Patents* 53–83 (1967).

Compare, e.g., 35 U.S.C. § 287(c) (imposing enforcement restrictions on patents for medical treatments); Article 27, Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, Annex 1C: Agreement on Trade-Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods, GATT Doc. MTN/FA II-A1C (Dec. 15, 1993), 33 I.L.M. 81 (1994); Articles 52, 53, Convention on the Grant of European Patents (EPC) of October 1973, as amended through 29 November 2000.

in *Le Roy v. Tatham,*[34] and *O'Reilly v. Morse.*[35] It extends to a few decisions of the Supreme Court subsequently.[36]

This second objective is more difficult to reject, but the better view is that it also should not impact the modern test for statutory subject matter. The rule against patenting a beneficial result has been applied only sparingly in modern cases, and attempts to make sense of it are confused and unclear.[37] More importantly, as a conceptual matter the basic questions regarding this type of overbreadth are no different from those that are involved in the analysis of overbreadth in other areas.[38] In particular, they involve a comparison of the scope of the exclusive right being sought, with the scope of the teaching that the patentee has supplied.[39] Accordingly, the question of overbreadth addressed in *Leroy v. Tatham* is more logically addressed, in the modern statute, in connection with the law that deals with the adequacy of disclosure under the first paragraph of section 112.[40] It should not be done in connection with section 101.

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[34] *Le Roy v. Tatham,* 55 U.S. 156 (1852) ("A patent is not good for an effect, or the result of a certain process, as that would prohibit all other persons from making the same thing by any means whatsoever. This, by creating monopolies, would discourage arts and manufactures, against the avowed policy of the patent laws.").

[35] *O'Reilly v. Morse,* 56 U.S. 62 (1853) (invalidating Morse's eighth claim).

[36] *See, e.g., Tilghman v. Proctor,* 102 U.S. 707 (1880); *Dolbear v. American Bell Tel. Co.,* 126 U.S. 1 (1888).

[37] *See, e.g.,* Albert H. Walker, *Textbook on the Law of Patents* 1-19 (2nd ed. 1886); Christopher L. Ogden, *The Patentability of Algorithms After* State Street: *The Death of the Physicality Requirement,* 83 JPTOS 491 (2001).

[38] *See, e.g.,* Charles E. Bruzga, *A Review of the* Benson-Flook-Diehr *Trilogy: Can the "Subject Matter" Validity of Patent Claims Reciting Mathematical Formulae Be Determined Under*

4. This leaves the third objective, which is rightly viewed as the statutory subject matter requirement's dominant objective. It is accepted doctrine that the statutory subject matter requirement functions to confine the award of patent rights to developments in the technological arts.[41] Confining patentability in this way is critical: it prevents the profit incentive of the patent system – and its underlying diminution of

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35 U.S.C. Section 112?, 69 JPTOS 197 (1987).

[39] *Compare, e.g., In re Fisher*, 427 F.2d 833 (CCPA 1970) (addressing entitlement to generic claim).

See generally, e.g., 2 R. Carl Moy, *Walker on Patents* §§ 7:23 - 7:26 (2008).

[40] 35 U.S.C. § 112, par. 1.

[41] *See, e.g., In re Prater*, 415 F.2d 1393, 1403 (CCPA 1969); *In re Musgrave*, 431 F.2d 882, 893 (CCPA 1970) ("All that is necessary, in our view, to make a sequence of operational steps a statutory 'process' within 35 U.S.C. § 101 is that it be in the technological arts so as to be in consonance with the Constitutional purpose to promote the progress of 'useful arts.'").

the free market – from distorting activities beyond those that Congress intended to target. [42]

This objective is accomplished by classifying as unpatentable two broad categories of subject matter. First, the law excludes those things that, while created by human activity, do not involve the use of technology.[43] Second, the law also excludes those things that, while technological, are not the product of human intervention into the natural world.[44]

This Court has described the statutory subject matter requirement in these terms, consistently and for many years. As early as 1852, the Court noted that patent rights could not be obtained over natural "agencies,"or "powers," such as electricity, themselves. But "[i]n all such cases," the Court declared, "the processes used to extract, modify, and concentrate natural agencies, constitute the invention. The elements of the power exist; the invention is not in discovering them, but in applying them to useful objects."[45] The Court has made remarkably similar declarations ever since. "An idea of itself is not patentable, but a new device by which it may be made practically useful is."[46] "While a scientific truth, or the mathematical expression of it, is not patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be."[47] "He who discovers a hitherto unknown phenomenon of nature has no claim to a monopoly of it which the law recognizes. If there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end."[48] The declarations have continued since the Patent Act of 1952.[49]

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[42] *See generally, e.g.,* Machlup, Fritz, An Economic Review of the Patent System, Study no. 15 of the Subcommittee on Patents, Trademarks, and Copyright of the Committee of the Judiciary of the United States Senate, 85th Cong., 2nd Sess., at 8-9, 55 (1958).

See generally also 2 R. Carl Moy, *Walker on Patents* §§ 5:3 - 5:4 (2008).

[43] *See, e.g., In re Miller,* 418 F.2d 1392 (CCPA 1969) (printed matter); *In re Gulack,* 703 F.2d 1381 (Fed. Cir. 1983) (printed matter); *In re Lowry,* 32 F.3d 1579 (Fed. Cir. 1994); *In re Warmerdam,* 33 F.3d 1354, 1361-62 (Fed. Cir. 1994) (data structure).

[44] *See, e.g., Gottschalk v. Benson,* 409 U.S. 63 (1972); *Diamond v. Diehr,* 450 U.S. 175, 184-85 (1981) ("Excluded from . . . patent protection are laws of nature, natural phenomena, and abstract ideas.").

5. The Institute urges this Court to adopt, as the direct test for statutory subject matter, this

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[45] *Le Roy v. Tatham,* 55 U.S. 156, 175 (1852).

[46] *Rubber-Tip Pencil Co. v. Howard,* 87 U.S. 498, 507 (1874).

[47] *Mackay Radio & Telegraph Co. v. Radio Corporation of America,* 306 U.S. 86 (1939).

[48] *Funk Bros. Seed Co. v. Kalo Inoculant Co.,* 333 U.S. 127 (1948).

[49] *See, e.g., Gottschalk v. Benson,* 409 U.S. 63 (1972).

formulation that has appeared so consistently in the Court's own decisions. That is, this Court should hold that, to be statutory subject matter, the invention described in the patent must both:

(i) be an artificial creation; and

(ii) utilize a law of nature.

Stated bluntly, this test is both simple and logically sound. It conforms admirably to the underlying social objectives. It would ensure that the effect of the patent system remains appropriately targeted.

Perhaps just as important, reliance on the proposed test would leave the statutory status of most subject matter unchanged. Naturally occurring phenomena fail, for example, because they are not artificial creations.[50] Matters of literature, fine arts, mental steps, and collections of data fail because they do not utilize a law of nature.[51] Scientific principles and mathematical equations fail to meet both parts of the test; they do not involve any artificial creation, nor do they apply any law of nature.[52] Adopting the rule is therefore a targeted solution; it would leave nearly all of the traditional adjudicated outcomes regarding statutory subject matter in place.

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[50] *Compare, e.g., Funk Bros. Seed Co. v. Kalo Co.,* 333 U.S. 127, 130 (1948) ("He who discovers a hitherto unknown phenomenon of nature has no claim to a monopoly of it which the law recognizes. If there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end.").

[51] *See, e.g.,* Morton C. Jacobs, *Note: The Patentability of Printed Matter: Critique and Proposal,* 18 Geo. Wash. L. Rev. 475 (1950).

6. Under this test, Bilski's invention is properly categorized as nonstatutory. While his method of handling financial risk is likely artificial, it does not utilize a law of nature. It thus fails under part (ii) of the proposed test, and the USPTO's rejection under section 101 of the patent statute should be affirmed. The same result likely will apply to all methods that are defined simply as financial transactions, or interactions between persons in a business setting.[53] Accordingly, adopting the proposed test for statutory subject matter would have the salutary effect of returning the law relating to the patentability of business methods to its historical position.[54] This

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[52] *Compare, e.g., Parker v. Flook,* 437 U.S. 584, 593 (1978) ("The rule that the discovery of a law of nature cannot be patented rests, not on the notion that natural phenomena are not processes, but rather on the more fundamental understanding that they are not the kind of 'discoveries' that the statute was enacted to protect.").

See also, e.g., Morton v. New York Eye & Ear Infirmary, 17 Fed. Cas. 879, 881 (C.C.N.Y. 1862).

[53] *See, e.g., In re Comiskey,* 544 F.3d 967 (Fed. Cir. 2009).

[54] *See, e.g., Ex parte Abraham,* 1869 C.D. 59; *United States Credit System Co. v. American Indemnity Co.,* 53 F. 818 (C.C.S.D.N.Y. 1893); *Hotel Security Checking Co. v. Lorraine Co.,* 160 F. 467, 469 (2nd Cir. 1908); *In re Sterling,* 70 F.2d 910 (CCPA 1934); *In re Wait,* 73 F.2d 982 (CCPA 1934); *In re Patton,* 127

would reverse the impact that some portions of the patent community have understood from *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*[55]

7. The proposed test is also superior because it is not unduly restrictive. There is, for example, a competing test that is described as holding processes nonstatutory unless they transform a physical substance into a different state or thing. This competing test stems from an 1876 decision, *Cochrane v. Deener.*[56] The test has been considered influential since it was rendered, and is at least referred to in many subsequent decisions.[57] *Cochrane v. Deener,* however, was itself the endpoint of a series of early cases that dealt with the basic patentability of

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F.2d 324 (CCPA 1942); *Loew's Drive-In Theaters, Inc. v. Park-In Theaters, Inc.*, 174 F.2d 547 (1st Cir. 1949); *In re Chatfield,* 545 F.2d 152 (CCPA 1976); *Paine, Webber, Jackson & Curtis, Inc. v. Merrill Lynch, Pierce, Fenner & Smith, Inc.*, 546 F.Supp. 1358 (D. Del. 1983).

[55] *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998).

See generally also, e.g., R. Carl Moy, *Subjecting Rembrandt to the Rule of Law: Rule-Based Solutions for Determining the Patentability of Business Methods,* 28 Wm. Mitchell L. Rev. 1047 (2002).

[56] *Cochrane v. Deener,* 94 U.S. 780 (1876).

[57] *See, e.g.*, *New Process Fermentation Company v. Maus,* 122 U.S. 413, 424 (1887); *Ex Expanded Metal Co. v. Bradford,* 214 U.S. 366, 383 (1909); *Holland Furniture Co. v. Perkins Glue Co.*, 277 U.S. 245, 255 (1928); *Gottschalk v. Benson,* 409 U.S. 63, 70 (1972); *Diamond v. Diehr,* 450 U.S. 175, 187-88 (1981).

methods.[58] The test that it articulated is best viewed as a rough solution to the questions posed by method inventions that was appropriate to that time. It should not be viewed as an ironclad requirement. This is particularly true since now, over a century later, manufacturing and the manipulation of physical raw materials are a smaller, declining part of the economy overall. Rather, the law should be free to employ a test that expresses the same basic value judgments in a more modern context.[59]

This better view, in fact, is in line with modern precedent. In *Gottschalk v. Benson,* for example, this Court expressly declined to adopt the rigid historical test of *Cochrane v. Deener*: "It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing.' We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents."[60] The Court also expressly reserved the question in

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[58] *See, e.g., Le Roy v. Tatham,* 55 U.S. 156 (1852); *Corning v. Burden,* 56 U.S. 252 (1853); *Tilghman v. Mitchell,* 86 U.S. 287 (1873).

See generally, e.g., 2 R. Carl Moy, *Walker on Patents* §§ 5:28 - 5:29 (2008).

[59] *See generally* R. Carl Moy, *Subjecting Rembrandt to the Rule of Law: Rule-Based Solutions for Determining the Patentability of Business Methods,* 28 Wm. Mitchell L. Rev. 1047 (2002).

[60] *Gottschalk v. Benson,* 409 U.S. 63, 71 (1972).

Parker v. Flook.[61] Thus, it is clear that this Court has the freedom to adopt the better, more basic test for statutory subject matter that the Institute urges.

C. Limiting statutory subject matter to applied technology is consistent with major foreign patent systems.

The foregoing view of the statutory subject matter requirement finds support in the patent systems of major foreign countries. While not binding precedent on this Court, the manner in which these systems have answered the same question in this case is instructive.

The Japanese Patent Act limits patentable inventions to "the highly advanced creation of technical ideas utilizing the laws of nature."[62] Thus, that system has settled on essentially the same view that is being urged here. The Japanese Patent Office has issued further explanation on this point in its Examination Guidelines. According to those Guidelines,

> [i]f claimed inventions are any laws as such other

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[61] *Parker v. Flook,* 437 U.S. 584, 588 n.9 (1978) ("As in *Benson*, we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents.").

[62] Japan Patent Law, Law No 121 of 1959, art 2.

> than the law of nature (e.g. economic laws), arbitrary arrangements (e.g. a rule for playing a game as such), mathematical methods or mental activities, or utilize only these laws (e.g. methods for doing business as such), these inventions are not considered to be statutory because they do not utilize the law of nature.[63]

The outcomes described in the examination guidelines, and the reasoning by which those results are reached, are remarkably similar to those urged by Respondents in connection with the application of Bilski.[64]

The German Patent Act does not define the concept of "invention" directly. Section 1 of that law, however, states that "[p]atents shall be granted for inventions that . . . are susceptible of industrial application."[65] The German Guidelines for Examination Procedure demonstrate how these statutory concepts apply to business methods. The Guidelines state that patents shall only be granted for inventions that relate to a field of technology. Within those inventions, patent protection is available for "systematic teaching using controllable natural forces to achieve a result with clear cause and effect." They further state that "[t]he 'direct' utilization of controllable natural forces is not mandatory for the technical character of a teaching, but the result must be based on controllable natural forces and not on evaluative activity of the human mind."[66]

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[63] Japanese Patent Office, Examination Guidelines for Patent and Utility Model in Japan, Pt. II, Ch.1, § 1 (May 2005) (Industrially Applicable Inventions).

[64] *See generally, e.g.*, James S. Sfekas, Comment: *Controlling Business Method Patents: How the Japanese Standard For Patenting Software Could Bring Reasonable Limitations to Business Method Patents In the United States*, 16 Pac. Rim. L. & Pol'y J. 197 (2007).

[65] German Patent Law of 1980, Pt. I, § 1(1).

Both the German and European Patent Systems explicitly state that business methods are not statutory subject matter.[67]

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[66] German Patent Office, Guidelines for the Examination Procedure, 3.3.3.2.1 (March 2004) (Basic Requirements Pursuant to Sec. 1 to 5 Patent Law).

[67] German Patent Law of 1980, Pt. I, § 1(2); Art. 52(2)(c), Convention on the Grant of European Patents (EPC) of October 1973, as amended by the act revising Article 63 of 17 December 1991, and by decisions of the Administrative Council of the European Patent Organisation of 21 December 1978, 13 December 1994, 20 October 1995, 5 December 1996 and 10 December 1998.

See generally also, e.g., Brian P. Diddinger, *Limiting the Business Method Patent: A Comparison and Proposed Alignment of European, Japanese and United States Patent Law*, 69 Fordham L. Rev. 2523 (2001); 1 Singer & Stauder, *The European Patent Convention: A Commentary*, ch. 1, art. 52, comment 16 (3rd ed. 2003) (discussing technical content requirement of European Patent Convention).

CONCLUSION

For the foregoing reason, the Institute respectfully submits that Bilski's application for patent is unallowable, and that the rejection of that application by the United States Patent and Trademark Office should be affirmed.

Respectfully submitted,

Date: October 2, 2009

R. CARL MOY
Professor of Law
William Mitchell College of Law[68]
Intellectual Property Institute
875 Summit Avenue
St. Paul, Minnesota 55105
Ph. (651) 290-6344
Fax (651) 290-6406
Counsel of Record

William Mitchell College of Law
Intellectual Property Institute
Counsel for amicus curiae

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[68] This brief was prepared with the research assistance of the following students: Kodi Jean Church, Rebecca Coobs, James Denker, Andrew Dosdall, Chad Hammerlind, Bradley Nelson, Matthew Nielsen, Stephen P. Podobinski, Jon Seppelt, Benjamin Stander, and Abigail Tyson.

JAY ERSTLING
Professor of Law
William Mitchell College of Law
Intellectual Property Institute
875 Summit Avenue
St. Paul, Minnesota 55105
Ph. (651) 290-7533
Fax (651) 290-6406
Of Counsel

AMICUS
CURIAE
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BERNARD L. BILSKI and RAND A. WARSAW
Petitioners,
v.
JOHN J. DOLL
Respondent.

On Writ of Certiorari to
The United States Court of Appeals
For the Federal Circuit

BRIEF OF *AMICUS CURIAE* YAHOO! INC. IN SUPPORT OF NEITHER PARTY

DUANE R. VALZ
Yahoo! Inc.
701 First Avenue
Sunnyvale, CA 94089
(408) 349 3300

CHRISTOPHER J. WRIGHT *
TIMOTHY J. SIMEONE
JOSEPH C. CAVENDER
Wiltshire & Grannis LLP
Washington, D.C. 20036
(202) 730 1300

**Counsel of Record*

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QUESTION PRESENTED

Section 101 of the Patent Act makes "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof" patent-eligible. The question presented is whether the Federal Circuit erred by holding that the "definitive test" for determining whether a process claim is patent-eligible is whether "it is tied to a particular machine or apparatus" or "it transforms a particular article into a different state or thing."

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INTEREST OF AMICUS CURIAE[1]

Yahoo! Inc. ("Yahoo!") provides services to more than 500 million individuals each month worldwide and operates one of the world's most popular Internet destinations. The company is a leading innovator in the computing and Internet sectors, holds many patents relating to Internet communication, and also licenses a variety of technology patents both to and from third parties. From time to time, Yahoo! finds it necessary to enforce its own patent rights as well as to defend itself against allegations that it infringed a third party's patent. Accordingly, Yahoo!'s interest is in a balanced and efficient patent system that fairly rewards innovation.

INTRODUCTION AND SUMMARY OF ARGUMENT

The rule announced by the Federal Circuit in this case, under which a "process" is patent-eligible only if it is tied to a particular machine or transforms a physical article into a different state or thing, is both conceptually and practically flawed. Moreover, the test represents a misreading of this Court's precedents. Yahoo! urges the Court to restore an understanding of 35 U.S.C. §101 that is faithful to the broad language of the provision and consistent with the purposes of the patent system. That requires a test designed to identify the limited exceptions to patent eligibility rather than one that interposes an unwarranted obstacle to patentability for a vast array of modern innovations. Notably, however, Yahoo! supports neither party in this case. Although the Federal Circuit erred in adopting the machine-or-transformation test, Bilski's process claim is not patent-eligible under a proper reading of §101.

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[1] Counsel for both parties have consented to the filing of this brief, and their consents have been filed with the Clerk of this Court. No counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than *amicus curiae* or its counsel made a monetary contribution to its preparation or submission.

The language of §101 is sweeping, encompassing "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." "Process" is defined broadly to mean "process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material." 35 U.S.C. §100(b). But while §101 is broadly written, the conclusion that a claim is patent-eligible under that provision does not mean that a patent should issue—35 U.S.C. §§102 and 103, for instance, establish important limitations relating to novelty and non-obviousness.

This Court has recognized two related reasons for limiting the broad language of §101. First, "laws of nature, natural phenomena, and abstract ideas," *Diamond v. Diehr*, 450 U.S. 175, 185 (1981), are not patentable because everyone is entitled to share in what the Court has described as "fundamental truth[s]" of the natural world. *Le Roy v. Tatham*, 55 U.S. 156, 175 (1852). Relatedly, the Court has explained that as a practical matter permitting excessively broad patents would undermine the purposes of the Patent Act by preempting future innovations. *Id.*

The machine-or-transformation test does not adequately reflect either the statutory language or these underlying principles governing patentability. As to the former, neither the ordinary meaning nor the statutory definition of the word "process" limits the term to processes tied to machines or to physical transformations. To the contrary, Congress's separate listing of "process" and "machine" supports the conclusion that they are separate, so that a process need not be tied to a particular machine. Similarly, the language relating to a new "process" is listed separately from the language relating to a new "composition of matter," supporting the conclusion that a new process need not transform matter to a new state. As to the latter, cases decided since the decision below illustrate that with respect to the cutting-edge issues of today, the test focuses attention on questions irrelevant to the statute's fundamental purpose of rewarding innovation. In practice, the machine-or-transformation test elevates form over substance and permits the limited exceptions to §101 eligibility to swallow the general rule.

At the Federal Circuit, Yahoo! urged the court to reject the machine-or-transformation test and to instead build upon *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, which found that a process is patent-eligible only if it produces a "useful, concrete[,] and tangible result." 149 F.3d 1368, 1373 (Fed. Cir. 1998) (quoting *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994). Notably, however, while the fact that a process leads to such a result will often distinguish the claimed invention from a natural law or abstract idea, the *State Street* test is overinclusive. To be patent-eligible under §101, a process must *also* be circumscribed in scope, limited by clearly defined steps that are stable, predictable, and reproducible—*i.e.*, it must be "machine-like." This latter requirement captures the insight of industrial-era cases that a patent-eligible process is not just any series of steps, but should be limited to a *specific* series of steps so as not to "preempt" other ways to accomplish the same result.

This case illustrates why the analysis we propose is superior to the "machine-or-transformation" test. The problem with Bilski's patent claim is not that it fails to involve a machine or a physical transformation. The problem is that it essentially attempts to patent the *idea* of hedging, at least with respect to commodities trading, and fails to propose a specific process for hedging. If Bilski had developed a process that, in machine-like fashion, directed commodities traders to take a clearly defined series of steps to hedge their position, that process might lead to useful, concrete, and tangible results. In addition, a patent for such a specific process would not broadly preempt other methods of hedging, so it would not foreclose innovators from developing superior hedging processes. But Bilski does not claim a specific series of steps that are stable, predictable, and reproducible—and that failure, rather than the absence of a machine or a physical transformation, is why his claims should not be patent-eligible.

ARGUMENT

I. THE FEDERAL CIRCUIT'S MACHINE-OR-TRANSFORMATION TEST IS BOTH CONCEPTUALLY AND PRACTICALLY FLAWED.

At the heart of this case is the question of how to distinguish processes that should qualify as patent-eligible subject matter under Section 101 of the Patent Act from those that should not. The Federal Circuit found that question can be answered by focusing exclusively on whether the claimed invention is "tied to a particular machine or apparatus" or "transforms a particular article into a different state or thing"—the "machine-or-transformation test." *In re Bilski*, 545 F.3d 945, 954-55 (Fed. Cir. 2008). The Federal Circuit was wrong. While *Bilski*'s machine-or-transformation test was (and remains) a useful proxy for the principles that distinguish the patentable from the unpatentable in the context of Industrial Age devices and processes, it is ill-suited to perform that task in the context of today's advanced technologies.

A. The Machine-or-Transformation Test Is Conceptually Flawed Because a Patent-Eligibility Standard Focusing Solely on Physicality Requirements Is Ill-Adapted to Today's Technologies.

The machine-or-transformation test was developed in the context of claims for traditional electro-mechanical devices and manufacturing processes. It is an essentially backward-looking test, limiting patent eligibility today to the kinds of things for which patents were issued years, decades, or even centuries ago. But the patent system is fundamentally about *advances* in technology, about *tomorrow's* innovations, and a test limiting patent eligibility to *yesterday's* technologies makes little sense.

While a system of precedent is necessarily somewhat backward-looking, this Court must take care to ensure that its precedents are not applied to prevent the law (and especially the forward-looking law of patents) from keeping pace with changes in the world in which we live. In adopting the machine-or-transformation language from this Court's decision in *Gottschalk v. Benson* as the "definitive test" for patentability, *Bilski*, 545 F.3d at 954, the Federal Circuit ignored this Court's admonition to avoid "freez[ing] process patents to old technologies, leaving no room for the revelations of the new, onrushing technology." *Benson*, 409 U.S. 63, 71 (1972).

Indeed, *Benson* itself expressly *rejected* the claim that the machine-or-transformation test applies is necessarily exhaustive:

> It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a "different state or thing." We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.

Id. Several years later, the Court made the same point in *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978):

> An argument can be made ... that this Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a "different state or thing." [Citation omitted.] As in *Benson*, we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents.

Similarly, while this Court's most recent decision addressing the scope of patentable subject matter, *Diamond v. Diehr*, 450 U.S. 175 (1981), provided "transforming or reducing an article to a different state or thing," *id.* at 192, as *examples* of patentable functions, it did not impose any rigid formula *limiting* patentability to such circumstances. Taken together, this Court's precedents leave no doubt that patent eligibility analysis under §101 must be flexible enough to take account of "new, onrushing technology."

The machine-or-transformation test lacks that flexibility. At a time when many of society's most significant technological advances involve electronic signals and magnetic impulses, the inquiry into whether there has been a change of tangible materials to a "different state or thing" is no longer exhaustive. Similarly, in the realm of computer-executed processes, the line between a "machine" and a "process" is indistinct at best. Technically skilled persons can implement a series of functions in either "hardware" (*e.g.*, logic circuits embedded on a microchip) or "software" (*e.g.*, instructions to be executed by a computer). Accordingly, as a conceptual matter, whether a process is tied to a particular machine or results in the transformation of matter no longer reveals whether the process "as a whole" is "performing a function which the patent laws were designed to protect." *Id.*

A concrete example illustrates this conceptual failing. Much of the popular music to which consumers listen today is heard in "MP3" format. MP3 is a standard for compressing digital audio files—a compression algorithm based on characteristics of human hearing that removes approximately 90% of the data from digital music files without substantially affecting humans' perception of the reproduced sound. The MP3 algorithm can be thought of as a complex mathematical formula with a specific application. But it does not result in any "physical" transformation—only the digital data are altered. Nor is it "tied" to any "particular" machine—indeed, while a "particular" machine could certainly be built to run the algorithm, one of its chief benefits is that it may be run on any "general purpose" computer. The process may, in other words, be instantiated in either software or hardware. Few would doubt that this is the kind of technological advance meriting patent protection and, in fact, the PTO issued a patent for MP3 technology. *See* U.S. Patent No. 5,579,430 (filed Jan. 26, 1995 with a priority date of Apr. 17, 1989). But this innovation would not appear to be patentable under a strict interpretation of the machine-or-transformation test.

B. The Machine-or-Transformation Test Is Difficult to Apply, Incompletely Captures the Policies Underlying the Patent Act, and Threatens to Destabilize Previously Settled Areas of Law.

The cases—both judicial and administrative—attempting to apply the machine-or-transformation test since the Federal Circuit's decision in this case demonstrate that the test fails to address the real question of whether an invention *should* be patent-eligible. Moreover, because the Federal Circuit's reasoning cannot be confined to "process" patents, the problems with the machine-or-transformation test are already affecting other areas of patent law as well.

The Federal Circuit has decided two §101 cases since its *Bilski* decision, and both highlight problems with the machine-or-transformation test. In *In re Ferguson*, 558 F.3d 1359, 1361 (Fed. Cir. 2009), the panel unanimously agreed that process claims for "[a] method of marketing a product" by sharing a marketing force for different "products that are made by a plurality of different autonomous producing compan[ies]" were not patent-eligible.

Judge Newman's concurrence, however, foreshadowed the difficulty of applying a test tied to physicality requirements in the context of computer-implemented processes. She noted that, on one hand, the *Bilski* court had rejected the "useful, concrete, and tangible" test of *State Street* and required that patent-eligible claims must be tied to a "particular" machine if they do not involve a transformation of matter. On the other hand, Judge Newman observed, the *en banc* court had not overruled *State Street* but had instead found that the portfolio management process at issue there was "performed by a computer, thus meeting the *Bilski* test." *Ferguson*, 558 F.3d at 1367. Judge Newman plainly doubted whether a test that requires a tie to a "particular machine" but yet finds that requirement may be satisfied when a process is "performed by [a] computer" provides sufficient guidance to the PTO and other courts.

The Federal Circuit's second and most recent post-*Bilski* patentability decision, *In re Comiskey*, was first decided in 2007 but reconsidered by the original panel in 2009 in light of *Bilski*. The applicant advanced both "method" (Claim 1) and "system" (Claim 17) claims for "mandatory arbitration resolution regarding one or more unilateral [legal] documents" such as wills or contracts. *Comiskey*, 554 F.3d 967, 970 (Fed. Cir. 2009). The "method" described by Claim 1 called for the document and its author to be "enroll[ed] ... in a mandatory arbitration system"; for mandatory arbitration language to be incorporated into the document; for parties wishing to challenge the document to submit a request for arbitration; and for the dispute to be arbitrated and subject to a final award or decision. *Id.* The "system" described by Claim 17 was nearly identical, except that it called for the use of several "module[s]," including a "registration module" for enrolling a person and an "arbitration module" for incorporating arbitration language into the unilateral document. *Id.* at 971. In addition, four dependent claims explicitly required the use of a computer or other machine to establish "access to the mandatory arbitration ... through the Internet, intranet, World Wide Web ... or other communication means." *Id.* at 981.

On reconsideration, the *Comiskey* court found that the process claims were unpatentable because they "do not require a machine, and ... do not describe a process of manufacture or a process for the alteration of a composition of matter." *Id.* In contrast, however, the court found that Claim 17's recitation of "modules," together with the dependent claims' reference to "access to the mandatory arbitration" via the Internet or other communications means, "could require the use of a machine as part of Comiskey's arbitration system." *Id.*

Dissenting from the denial of rehearing *en banc*, Judge Newman wrote that *Comiskey*'s "Section 101 split between [the] method and system claims does not conform with any relevant statute or advance any known policy." 2009 U.S. App. LEXIS 400, *44 (Fed. Cir. 2009). She argued that if "these steps are viewed as 'abstractions'" under *Bilski*, then "so simple a drafting gambit as reciting in the claims that a computer or other device (a calculator? an abacus?) may be used" should not change that fact. *Id.* According to Judge Newman, "[i]f the replacement of 'process' with 'system' or 'module' ... suffices to provide *Bilski*'s 'meaningful limits' under Section 101, we should be explicit." *Id.* at *45. Plainly, however, Judge Newman believed that the Federal Circuit's *Bilski* decision should instead be revisited.

Recent decisions of the Board of Patent Appeals and Interferences ("BPAI") cast further doubt on the distinctions drawn by the machine-or-transformation test. In *Ex parte Nawathe*, No. 2007-3360 (BPAI Feb. 9, 2009), for example, the application claimed a method and system for "inputting multiple extensible Markup Language (XML) documents; creating a data representation of said multiple XML documents; and reducing redundancy across said multiple XML documents via a fixed set of tables." Slip op. at 2. Claims 1 and 16 recited a "computerized method" comprising these steps, while Claim 25 claimed an "apparatus" for performing the steps. *Id.* at 8-9. The BPAI reasoned that the "computerized recitation" of Claims 1 and 16 recited "a general purpose processor ... as opposed to a particular computer specifically programmed for executing the steps of the claimed method." *Id.* at 8. Accordingly, "under the machine-or-transformation test, the claimed method fails to recite a *particular* machine." *Id.* (emphasis added). As to Claim 25, however, the BPAI found that "since the claim recites a physical apparatus with physical modules" for performing the steps of the process, the claim "is not ... directed to an abstract idea." *Id.* at 9. *Nawathe* thus holds that a computerized process executed by a "general purpose" machine is not patent eligible, but an "apparatus" executing the same process is. The BPAI did not explain how or why this distinction flows from the language of the Patent Act or advances its purposes.

In *Ex parte Gutta*, No. 2008-3000 (BPAI Jan. 15, 2009), the claims were directed to a "computerized method performed by a data processor" that made recommendations to a consumer by comparing the consumer's user history to that of a third party in a specific, automated way, importing aspects of the third party's user history and displaying the resulting recommendations to the consumer. Slip op. at 2. The BPAI rejected this process claim because, under *Bilski*, "the use of a specific machine must impose meaningful limits on the claim's scope to impart patent-eligibility." *Id.* at 5. Neither the use of a "data processor" nor the "displaying" of results was sufficient "to impart patentability to a claim involving the solving of a mathematical algorithm." *Id. Gutta* is consistent with *Nawathe* in that a computerized process was again found unpatentable in the absence of a "particular" machine. But it is difficult to see how the application of *Gutta*'s unique "mathematical algorithm" to produce specific recommendations could be considered an "abstract idea," and harder still to see why the application should be considered any *more* patentable if the applicant were to promise to instantiate the claimed process in an "apparatus."

The question from Judge Newman's *Comiskey* dissent—whether it makes sense to treat "process" and "system" claims describing the same invention differently—also arises in recent BPAI decisions. Moreover, a related question exists with respect to so-called "*Beauregard* claims," named after the Federal Circuit's decision in *In re Beauregard*, 53 F.3d 1583 (Fed. Cir. 1995). *Beauregard* claims recite a computer-readable storage medium (*e.g.*, a hard drive, CD, or DVD) containing a set of instructions that causes a computer to perform a process. While such claims were once considered unpatentable, *Beauregard*'s rule that computer programs contained on computer-readable media *are* patentable has now been in place for nearly 15 years. Recent BPAI decisions suggest that whether an invention is claimed as a process (a series of steps for reaching a result), a system (the same steps performed by a computer), or a *Beauregard* claim (the same set of steps recorded on a computer-readable medium) may be outcome-determinative under §101.

In *Ex Parte Atkin*, No. 2008-4352, 2009 Pat. App. LEXIS 1 (BPAI Jan. 30, 2009), the claims described a method for "converting a unidirectional domain name to a bidirectional domain name," so that Internet domain names could be displayed in a way that is more meaningful in languages with non-English reading orders, such as Hebrew (which is bi-directional). *Id.* at *13. The claims recited specific, automated steps for breaking the English domain name into "a plurality of individual labels," evaluating each label for proper bidirectional display order, and reordering the characters appropriately. *Id.* at *7. Claim 1 set forth the invention as a process claim; Claim 5 recited a "computer readable medium encoded with computer software for accomplishing" the steps of the method claim; and Claim 9 recited a "system" including a "label definer" to break the name into labels, an "inferencer" to establish the proper direction within labels, and a "character reorderer"—presumably all software "modules"—to produce the display order. *Id.* at *15-19. The BPAI rejected Claim 1 because it did not "recite any machine or apparatus or call for transforming an article into a different state or thing." *Id.* at *18. Similarly, the Board rejected Claim 9 because neither the "system" label nor the terms "label definer," "inference," and "character reorderer" necessarily "impl[ied] the presence of any apparatus." *Id.* at *19-20. The BPAI, however, left "it to the Examiner to determine in the first instance whether [c]laim 5"—the *Beauregard* claim—"recite[s] patent eligible subject matter." *Id.* at *22 n.8.[2] *Atkin* thus suggests that the same basic invention is not patentable when claimed as a process (a series of steps) or as a system (a series of steps performed by a computer) but may be patentable when made as a *Beauregard* claim (a series of steps recorded on a computer-readable medium). And, of course, consistent with *Nawathe*, the same series of steps would presumably be patent-eligible were the inventor to promise to instantiate them in an "apparatus."[3]

A recent district court case, *Cybersource Corp. v. Retail Decisions, Inc.*, 2009 U.S. Dist. LEXIS 26056 (N.D. Cal. Mar. 26, 2009), rejects the BPAI's emphasis on the form in which an invention is claimed but still manages to add to the analytical confusion. Plaintiff Cybersource sought to enforce its patent on an automated process for detecting fraud in an online credit card transaction. The process involved using the Internet to obtain information about other transactions initiated from the same Internet address and then "verifying the credit card information based upon the values of [a] plurality of parameters," wherein "each value among the plurality of parameters is weighted in the verifying step according to an importance, as determined by the merchant, of that value to the credit card transaction." *Id.* at *2-3. Claim 2 described the invention as a process, while Claim 3 invoked *Beauregard* by reciting a "computer-readable medium containing program instructions" for implementing the same process. *Id.* at *2. The court found that there was no "transformation" because "the claimed methods simply obtain and compare intangible data." *Id.* at *9. And while the invention certainly used the Internet, the Internet is not a "particular machine" within the meaning of the machine-or-transformation test. *Id.* at *20-24. Finally, the court disparaged *Beauregard* on the grounds that it "was not a decision on the merits of patentability," found that there "is at present no legal doctrine creating a special '*Beauregard* claim,'" for computer programs embedded in tangible media, and concluded that Claim 3 (like Claim 2) failed the "machine-or-transformation test for patent eligibility." *Id.* at *28-31. *Cybersource* thus cast a shadow over *Beauregard* claims but offered no analysis whatsoever of whether an automated process for detecting credit card fraud online *should* be patentable.

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[2] Other post-*Bilski* decisions of the BPAI have generally found that *Beauregard* claims *are* patent-eligible. *See, e.g., Ex Parte Mazzara*, No. 2008-4741, 2009 WL 291178 (BPAI Feb. 5, 2009) ("computer-usable medium" containing software was patent-eligible); *Ex Parte Van Beek*, No. 2008-2033, 2009 Pat. App. LEXIS 5, *1, 7 (BPAI Jan 16, 2009) ("computer-readable medium" containing a "file format" for storing a specific kind of data was patent-eligible).

[3] The Board reached similar results in *Ex parte Giacchetti*, No. 2008-2866 (BPAI Mar. 11, 2009), and *Ex parte Bo Li*, No. 2008-1213, 2008 Pat. App. LEXIS 27 (BPAI Nov. 6, 2008).

Returning to our earlier example of the MP3 algorithm, the BPAI cases indicate that the method itself would not be patentable, no more than the recommendations algorithm of *Gutta*. Decisions like *Nawathe* suggest that that an MP3 "system" reciting a "general purpose computer" likewise would not be patentable. On the other hand, a *Beauregard* claim reciting the process on a computer-readable medium *might* be patentable under BPAI precedent, although

Cybersource raises grave doubts on that issue. Of course, an "apparatus" dedicated to repeatedly implementing the MP3 algorithm would have the highest likelihood of being found patent-eligible.

Sometimes it is best to acknowledge that the emperor has no clothes. These distinctions make no sense, and they therefore cannot provide the consistency, stability, and predictability that Congress and this Court have found so critical in the area of patent law. *See, e.g., Fla. Prepaid Postsecondary Educ. Expense Bd. v. Coll. Sav. Bank*, 527 U.S. 627, 651 (1999) (noting that the need to "ensure consistency in the substantive application of the patent law" motivated Congress to take the unusual step of creating the Federal Circuit). This Court should refocus the test for patentability on the language and purposes of the Patent Act, and provide guidance capable of being consistently applied to today's high-tech innovations.

II. THE PLAIN LANGUAGE OF THE PATENT ACT IS BROAD, AND THIS COURT HAS PROPERLY FOUND FEW REASONS SUFFICIENT TO JUSTIFY EXEMPTIONS FROM THAT LANGUAGE.

The discussion above shows that the machine-or-transformation test set forth by the decision below is not working. The focus of this section is understanding why it is not working. In short, the Federal Circuit adopted its test purporting to provide guidance for *how* to distinguish patentable from unpatentable subject matter without considering *why* we make that distinction. That is putting the cart before the horse. An appropriate and effective test for patentability must reflect the language and purposes of the Act.

A. This Court's Cases Have Found the Scope of the Patent Act to be Broad but Not Unlimited.

The language of §101 sweepingly authorizes patents for "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." 35 U.S.C. §101. The Act's definition of "process" is likewise broad, defining the term somewhat circularly as a "process, art or method, and [the term] includes a new use of a known process, machine, manufacture, composition of matter, or material." 35 U.S.C. §100(b).

Section 101 is thus inclusive on its face, and this Court has "more than once cautioned that courts should not read into the patent laws limitations and conditions which the legislature has not expressed." *Diehr*, 450 U.S. at 182 (internal quotation and citation omitted). The Court has found that Congress intended statutory subject matter to be expansive, including "anything under the sun that is made by man." *Id.* (internal quotation and citation omitted).

At the same time, however, this Court's precedents make clear that §101 is not without limits. In particular, as relevant here, the Court has held that not every process "in the ordinary sense of the word" is patentable. *See Flook*, 437 U.S. at 588-89. The proper question under §101 is "whether the method described and claimed is a 'process' *within the meaning of the Patent Act*." *Benson*, 409 U.S. at 64 (emphasis added). In other words, some functions that are literally "processes" in the everyday sense of the word are not patent-eligible because they are not processes "within the meaning of the Patent Act." The hard question, of course, is how to distinguish processes that qualify under the Act from those that do not. Again, answering the question "how" to distinguish patent-eligible inventions from unpatentable subject matter depends on the antecedent question "why" some things should be patentable and some should not. Any reexamination of the machine-or-transformation test must accordingly analyze the fundamental reasons why some things are patentable and some things are not.

B. This Court has Identified Two Fundamental Reasons for Excluding Subject Matter from the Scope of Section 101.

More than 150 years ago, in *Le Roy*, 55 U.S. at 175, this Court first expressly held that "a principle is not patentable." More importantly, however, the *Le Roy* Court provided two reasons *why* a principle should not be patentable. First, the Court explained that "in the abstract" a principle "is a fundamental truth; an original cause, a motive" as to which "*no one can claim ... an exclusive right.*" *Id.* (emphasis added). In other words, the Court found that some things cannot be patented because *everyone* is entitled to share freely in the "fundamental truths" of the natural world. Second, the Court wrote that as a practical matter patents on broad principles should not issue because such "monopolies" would only "discourage arts and manufactures, against the avowed policy of the patent laws." *Id.* In short, people should not be able to patent inventions—or "principles"—that are so broad that they leave insufficient room for others to innovate.

Later cases reiterated these reasons for limiting §101. For example, in *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948), the Court held that "patents cannot issue for the discovery of the phenomena of nature." The Court explained that "the manifestations of the laws of nature" are "free to all men and reserved exclusively to none." *Id.* As a result, "[h]e who discovers a hitherto unknown phenomenon of nature has no claim to a monopoly of it which the law recognizes." *Id.* Thus, "Einstein could not patent his celebrated law that $E=mc^2$; nor could Newton have patented the law of gravity. Such discoveries are manifestations of ... nature" to which everyone should have access. *See Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980).

The most famous elaboration of *Le Roy*'s second insight—that overbroad claims are not patent-eligible—came only two years later, in *O'Reilly v. Morse*, 56 U.S. 62 (1854). *Morse* approved an application for a patent on the process of using electromagnetism to send telegraph messages. But the Court rejected Claim 8, which claimed the use of "electro magnetism, however developed for marking or printing intelligible characters, signs or letters at any distances." *Id.* The Court reasoned that the claim was too broad—a future inventor could discover a different "method of writing or printing at a distance by means of the electric or galvanic current, without using any part of the process" in Morse's claims, and yet "the inventor could not use it nor the public have the benefit of it" without Morse's permission. *Id.* at 113. *Morse* thus recognized that the patentability of an idea declines as its breadth increases—broad patents impose higher costs on society than narrow ones because they inhibit future innovation, and patents should not issue when the costs outweigh the benefits.[4] In the more than 150 years since *Morse*, this Court has repeatedly reaffirmed this fundamental point: The patent system "reflects a balance between the need to encourage innovation and the avoidance of monopolies which stifle competition without a concomitant advance in the 'Progress of Science and useful Arts.'" *Bonito Boats Inc. v. Thunder Craft Boats*, 489 U.S. 141, 146 (1989).

C. The Court's Modern Cases Addressing Processes Reflect the Limitations Discussed Above.

Among this Court's modern trilogy of process-eligibility cases—*Gottschalk v. Benson*, *Parker v. Flook*, and *Diamond v. Diehr*—the earliest case, *Benson*, most directly addresses the underlying patentability concerns discussed above. In *Benson*, the Court considered a patent application for a method of converting binary-coded decimal numerals into pure binary numbers, a process to be performed by a computer. 409 U.S. at 64. The patent application disclosed only a series of mathematical operations to be performed on any number entered as the input; the process would then provide a new, binary number as output. The Court began its analysis by expressly citing *Le Roy*'s first limitation on patentability, that a "principle, in the abstract ... cannot be patented, as no one can claim in [it] an exclusive right." *Id.* at 67. But the *Benson* opinion also reflected *Le Roy*'s prohibition on overbroad patents, noting that the claim was so "abstract and sweeping as to cover both known and unknown uses" of the claimed decimal-to-binary conversion formula. *Id.* at 68. Indeed, the Court expressly compared the overbreadth of the claim in *Benson* to that of the rejected claim in *Morse*. *Id.* The *Benson* Court concluded that the claim was so broad that "if the judgment below [were] affirmed, the patent would wholly preempt the mathematical formula and in practical effect would be a patent on the algorithm itself." *Id.* at 72. This Court thus decided *Benson* with *Le Roy*'s exclusions from patentability in mind, and in light of those limitations *Benson* seems an easy case. The ability to convert decimal numerals into binary numbers is a feature of the world in which we live from which all should benefit. Moreover, mathematics in general is one of the "basic tools" of scientific and technological work, and permitting a patent on the process for making this conversion would surely inhibit innovation in some areas.

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[4] The notion of patent overbreadth is plainly related to the prohibition on patents for "fundamental truths." The broader an idea is, the more it resembles a fundamental principle, and the greater the justification for holding it in common for the good of all. But *Le Roy*'s second reason for excluding subject matter from §101 addresses a distinct concern—patents should not issue when they would inhibit future innovation.

Diehr involved the patentability of a process for curing synthetic rubber using a previously known mathematical formula, the "Arrhenius equation." Like *Benson*, the *Diehr* Court noted that no individual is entitled to a monopoly over a "phenomenon of nature" but yet "an *application* of a law of nature or mathematical formula ... may well be deserving of patent protection." *Diehr*, 450 U.S. at 188 & n.11. The Court also acknowledged the second concern of *Le Roy*, that a patent should not issue if it will broadly preempt innovation. In *Diehr*, however, while the "claimed process admittedly employ[ed] a well-known mathematical equation," the applicants did not "seek to pre-empt the use of that equation," but only "to foreclose from others the use of that equation in conjunction with all of the other steps in their claimed process." *Id.* at 187. Like *Benson*, then, *Diehr* expressly applied the reasons for limiting patent eligibility set forth by *Le Roy* and upheld the patent because it was consistent with those principles.

Flook lies both chronologically and conceptually between *Benson* and *Diehr*. In that case, the application described a process for calculating "alarm limits" used in monitoring catalytic conversion processes. *Flook*, 437 U.S. at 585. According to the Court, a "mathematical algorithm or formula," *id.* at 586, was "the only novel feature of respondent's method." *Id.* at 588. The Court appears to have assumed that all "mathematical algorithms" fall into the *Le Roy* prohibition on patenting "phenomena of nature" and held that because there was nothing else "novel" about the claimed invention a patent could not issue. *Id.* at 594-98.

Notably, however, *Diehr* was more cautious than *Flook* on the question whether an "algorithm" is necessarily unpatentable. *Diehr* characterized *Benson* as holding that "an algorithm, or mathematical formula, is like a law of nature, which cannot be the subject of a patent." 450 U.S. at 186. But *Diehr* cautioned that the term "algorithm" may have much broader meanings than *Benson's* definition of a "procedure for solving a given type of mathematical problem," and the *Diehr* Court specifically declined to "pass judgment on whether processes falling outside" that narrow definition would be patentable. 450 U.S. at 186 & n.9. *Diehr* accepted the result in *Flook*, however, reasoning that it was just like *Benson* because an "alarm limit" is "simply a number and the ... application sought to protect a formula for computing this number." *Id.* at 186.

D. Not All "Algorithms" Fall Within *Le Roy's* Limitations on Patentability.

The question reserved by *Diehr*—whether some algorithms may be patentable—has taken on greatly increased significance with the growing ubiquity of computers. Generally speaking, an algorithm is a finite sequence of instructions, an explicit, step-by-step procedure for completing a task. This broad definition of algorithm sounds, of course, much like a "method" or "process." But it also sounds like a computer program. Today's powerful and sophisticated computer hardware allows many processes that were once instantiated in "particular" machines—from sound studio mixing boards used for processing music to many of the most sophisticated devices used in manufacturing—to be accomplished by computers implementing algorithms.

Diehr correctly suggests that the patentability of such algorithms should turn on the Patent Act and its purposes, not on labels or categories. The principles set forth in *Le Roy* again shed considerable light on the issue. As discussed above, *Le Roy* indicates that "principles in the abstract" (*e.g.*, laws of nature) from which all should benefit should not be patentable, nor should patents issue that would leave others unable to innovate. But the MP3 algorithm discussed *supra* at 8, for example, is *not* a "law of nature." Neither is it an "abstract idea." A particular computerized process for converting large audio files to small ones while preserving the perceived quality of the sound reproduced is simply a tool developed by humans to accomplish a particular task. Such a tool is no more a law of nature or abstract idea than the cotton gin.

The *Le Roy/Morse* principle that patents should not issue if they will broadly "pre-empt" innovation also suggests a need to distinguish patentable from unpatentable algorithms. It would make no sense to grant exclusive rights over F=MA, $E=mc^2$, or the *Benson* formula for converting decimal numbers to binary ones because these are tools that everyone needs to be able to innovate freely. These insights are functionally irreplaceable, unique resources—we cannot expect further innovation to produce a better way to calculate the force generated by a moving object, and preventing people from taking advantage of this formula will thus reduce rather than spur innovation. Again, however, the MP3 algorithm is quite different. Granting exclusive rights over *one* way to reduce audio file sizes will not inhibit innovation—to the contrary, issuing a patent on this method of reducing file sizes may well spur others to invent better (and thus more valuable) ways to achieve the same end.

In short, this Court should take care to ensure that the categories "laws of nature," "natural phenomena," and "abstract ideas" are not unreflectively conflated or expanded beyond the boundaries justified by the policies underlying exclusions from §101. Categorization should not be allowed to substitute for analysis. Unfortunately, however, that is precisely what has happened in many of the Federal Circuit cases on patentability decided since *Diehr*.

III. THIS COURT SHOULD RECOGNIZE PRINCIPLES FOR PATENTABILITY CONSISTENT WITH THE LANGUAGE AND PURPOSES OF §101.

A. The Federal Circuit's Recent Tests for Patentability have Become Unmoored from the Language and Policies of the Act.

The Federal Circuit has been obliged to address the patent eligibility of "new, onrushing technology" many times since *Diehr*. In recent years, the court has vacillated between two tests for the patentability of a process—one privileging physicality as the key to patentability, and one emphasizing that the result of a patentable process must be useful, concrete, and tangible. Unfortunately, neither test fully reflects the broad language of §101 or the reasons *why* we distinguish patentable from unpatentable subject matter discussed above.

In *Arrhythmia Research Technology, Inc. v. Corazonix Corp.*, 958 F.2d 1053 (Fed. Cir. 1992), the Federal Circuit found the claimed process—which involved a programmed computer that translated analog electrocardiograph signals into digital form—patent-eligible because it "transform[ed] one *physical*, electrical signal into another." *Id.* at 1060-

61 (emphasis added). Two years later, in *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994), the Federal Circuit again applied a physicality test to determine whether Alappat's rasterizer—a computer programmed to display waveform data in a way that smoothed out the effects of noise and other distractions—was patentable subject matter. The Court determined that the programming permitting the computer to act as a rasterizer effectively creates a new, patent-eligible machine. *Id.* at 1545. Plainly, however, in both cases the physicality analysis was somewhat unsatisfying: electric signals are not very "physical" in the common sense, and re-programming a computer does not really create a new "machine." Moreover, neither case explained *why* patentability should turn on whether the invention claimed a physical transformation or a machine.

The more recent cases of *State Street* and *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999), responded to the difficulty of applying physicality requirements to algorithmically driven electronic processes by examining the *results* an invention would produce. Specifically, *State Street* found that a process applying a mathematical algorithm is patentable if it produces a "useful, concrete and tangible result." The Court held that a claimed data processing system for managing investment accounts produced such a result: "a final share price momentarily fixed for recording and reporting purposes." 149 F.3d at 1373.

The *State Street* test, however, was also unsatisfying. Dissenting from the dismissal of the writ in *Laboratory Corp. of America Holdings v. Metabolite Laboratories, Inc.*, 548 U.S. 124, 136-37

(2006), Justice Breyer wrote that the notion that *all* processes are patentable so long as they produce a "useful, concrete and tangible result" seems contrary to this Court's precedents. For example, "[t]he Court ... has invalidated a claim to the use of electromagnetic current for transmitting messages over long distances even though it produces a result that seems 'useful, concrete, and tangible.'" *Id.* (citing *Morse*). Justice Breyer explained that the *Lab. Corp.* claims "described [a] natural law," *Id.* at 137, that should be "free to all men and reserved exclusively to none." *Id.* at 127-28. Justice Breyer also emphasized that "[patent] protection in [some] cases ... would too severely interfere with, or discourage, development and the further spread of useful knowledge itself." *Id.* at 128.

Like Justice Breyer in *Lab. Corp.*, the Federal Circuit's decision below rejected the "useful, concrete, and tangible" test of *State Street*. But while Justice Breyer's analysis returned to *Le Roy*'s fundamental principles underlying patentability, the Federal Circuit's *Bilski* decision returned to the physicality analysis of *Arrhythmia* and *Alappat*, elevating the machine-or-transformation test as the sole test for patentability. *Bilski*, 545 F.3d at 961. As further set forth below, while that analysis may be helpful in some circumstances, it is not a sufficient basis on which to distinguish the patentable from the unpatentable.

B. Analysis of Patentability Consistent with the Fundamental Purposes of the Act Should Consider Both the Nature of the Claimed Process and the End Result.

We argue above that §101 is written in broad terms, but must be read in light of the underlying limitations on patentability articulated by this Court in cases like *Le Roy*. This Court, however, should provide more specific guidance to help the lower courts, the BPAI, and the PTO to distinguish patentable from unpatentable subject matter.

The Court need not entirely re-invent the wheel. Both tests developed by the Federal Circuit in recent years shed some light on the issue. The problem with the machine-or-transformation analysis is *not* that examining whether a claimed invention is "tied to a particular machine" or involves a physical "transformation" is never helpful. To the contrary, in the context of electromechanical devices, a tie to a particular machine helps to insure, for example, against the kind of overbreadth discussed in *Morse*. Industrial Age apparatuses and processes are inherently defined or limited by the physical-mechanical design of the machines involved. *Cf. Corning v. Burden*, 56 U.S. 252, 267 (1853) (suggesting that machines are patentable because they necessarily "produce a certain effect or result"). But the same cannot be said in the computer age. A primary benefit of modern computer hardware is that a broad range of processes can be run on a single device, limited only by the ingenuity and skill of the programmer. Accordingly, a tie to a "general purpose" computer should not mean that *any* process is patentable, but neither should it mean that *no* process is. It simply means that a tie to a machine is no longer an adequate test for patentability.

For such claims, *State Street* offers some help by looking to the *result*, rather than to ill-adapted physicality requirements. In many cases, a concrete, useful, and tangible result will suffice to distinguish a patentable application of an abstract principle from the unpatentable idea itself. As a general matter, a computer-implemented process—like the MP3 algorithm—that yields a specific concrete, useful, and tangible result will resemble a human-created tool rather than the kind of "natural law" or "fundamental truth" that *Le Roy* suggested should be held in common by all.

But the "concrete, useful, and tangible" test does not really address *Le Roy*'s other concern—*i.e.*, that a patent should not issue when it would be so broad or vague as to impede future innovation. Accordingly, while the machine-or-transformation test runs the risk of underinclusiveness with regard to contemporary processes like MP3 technology, *State Street*—as Justice Breyer observed in *Lab. Corp.*—appears overinclusive.

Below, Yahoo! argued that the *State Street* focus on results is incomplete because this Court has consistently taken care to examine not only the result, but also the particularity of the process by which that result is reached. Consistent with *Le Roy*'s prohibition on patents that would "preempt" innovation, only a patent on a *specific* way of reaching a result should be patentable. An application must be "sufficiently definite to confine the patent monopoly within rather definite bounds," *Benson*, 409 U.S. at 69, because a general patent on *all* ways of reaching a result would create the kind of monopoly that inhibits innovation. Yahoo! has described this analysis of the breadth of the claimed process as an inquiry into whether the process sets forth a series of "clearly defined steps" that are "stable, predictable, and reproducible."

Although this Court's cases do not use those terms, they do appear to examine the claims for stability, predictability, and reproducibility.[5] In *Flook*, for example, the Court emphasized that the claims as a whole did not adequately describe a specific process for incorporating the calculated alarm limit into the catalytic conversion process:

> The patent application does not purport to explain how to select the appropriate margin of safety, the weighting factor, or any of the other variables. Nor does it purport to contain any disclosure relating to the chemical processes at work, the monitoring of process variables, or the means of setting off an alarm or adjusting an alarm system. All that it provides is a formula for computing an updated alarm limit.

437 U.S. at 586; *see also Diehr*, 450 U.S. at 192 n.14 (emphasizing that these shortcomings had been

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[5] The core concept of stable, predictable, and reproducible claims harkens back to the Patent Act of 1790, which insisted that patent descriptions "shall be so particular, and said models so exact, as not only to distinguish the invention or discovery from other things before known and used, but also to enable a workman or other person skilled in the art or manufacture ... to make, construct, or use the same." 1 Stat. 109, 110.

critical to the decision in *Flook*). In short, in this Court's view, the application revealed no specific, reproducible *process*, but only an idea for a mathematical computation.

The *Diehr* Court also examined the specific steps claimed there. The Court found that "respondents' claims describe in detail a step-by-step method for accomplishing [the curing of synthetic rubber] beginning with the loading of a mold with raw, uncured rubber and ending with the eventual opening of the press at the conclusion of the cure." 450 U.S. at 184. In the Court's view, the fact that the application disclosed a particular process rather than a broad idea that could be accomplished through a variety of processes was critical to holding that the claims as a whole were patent-eligible. *Diehr* thus confirms that under §101 it is significant whether the claimed process is sufficiently stable, predictable, and reproducible, as well as whether there is a useful, concrete, and tangible result. As the Court put it over a century ago, "[w]hoever discovers that a *certain useful result* will be produced in any art by the use of *certain means* is entitled to a patent for it" *Tilghman v. Proctor*, 102 U.S. 707, 728 (1881) (emphasis added).

In urging the Court to recognize that a patent may issue only for a particular, step-by-step process set forth by the application—a process that is stable, predictable, and reproducible—Yahoo! seeks to refocus the patentability analysis on the core policies underlying the Patent Act and this Court's decisions. A patentable process must both describe an *application* of a principle rather than an abstract idea, and it must describe that application in a way that is sufficiently detailed and circumscribed to allow ample space for future innovation. *Cf. Morse*, 56 U.S. at 119 (an inventor must "specif[y] the means he uses in a manner so full and exact that anyone skilled in the science ... can, by using the means he specifies, without any addition to or subtraction from them, produce precisely the result he describes"). Sufficient specificity to ensure that the process may be predictably and reliably reproduced will protect future inventors from wrongful claims of patent infringement. In contrast, a process that may consist of one set of steps today and another tomorrow occupies a vague and ever-shifting patentable space, and would-be innovators could not know what is protected and what remains fair game.

Finally, it bears emphasis that Yahoo!'s focus on the stability, predictability, and reproducibility of the *process* itself, as well as on a concrete, useful, and tangible *result*, should not be taken to embrace the mistaken notion that patentable claims must describe every detail of the process. Consider the invention in *Neilson v. Thompson*, Web. P.C. 275, discussed at length in *Tilghman*, 102 U.S. at 722-26. Neilson invented a process for introducing hot air into a furnace by heating the air in a receptacle between a blowing apparatus and the furnace. *Id.* at 725. Notably, however, Neilson claimed "no particular mode of constructing the receptacle, or of heating it"; his invention lay in using a receptacle to heat air *before* introducing it into a furnace. *Id.* at 726. This invention is stable, predictable, and reproducible regardless of the shape of the receptacle or the nature of the heat source, and claims need not contain that level of specificity. In contrast, Morse's claim for any way of using electro-magnetism to print at a distance is just an idea—there is no way to reliably reproduce it unless much more is known about the nature of the invention. But if Morse's description of a specific, wired telegraph device to communicate over distance had included a disclaimer that it would not matter what kind of wires were used, the invention would have remained patentable notwithstanding that lack of specificity. The key question is whether the invention can be reliably reproduced, not whether every detail is articulated by the claims. *See Cochrane v. Deener*, 94 U.S. 780, 788 (1877) (noting that the process in that case "requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence").

IV. BILSKI'S INVENTION IS NOT PATENT-ELIGIBLE.

Under the test proposed by Yahoo!—which focuses on both the result a process produces as well as the steps by which that result is achieved—the patent application in this case was properly rejected.

Below, Bilski argued that the claimed method "produces 'a useful, concrete, and tangible result'" because it enables commodities suppliers and consumers to lessen their risk from varying prices caused by fluctuations in the demand for the commodity. *See* App. Supp. Br. 3. But the implementing steps of Bilski's process are so inadequately defined that they cannot be reliably followed to produce the result in a stable, predictable, or reproducible manner. For example, both the first and third limitations of the claim involve "initiating a series of transactions." There are, however, many ways to initiate a series of transactions, and the claim as a whole provides no constraint, structure, or definition to explain how these steps are to be performed. In short, these steps are so indefinite that they represent essentially no limitation at all. Accordingly, the claim as written is "so abstract and sweeping" that it would "wholly pre-empt" the use of any means to achieve the intended result. *See Benson*, 409 U.S. at 68-72. As such, Bilski's application essentially attempts to broadly patent the idea of hedging, at least with respect to commodities trading, and should be held not to state statutory subject matter.

Notably, however, that does not mean that no application for a hedging process could be patent-eligible. If Bilski had developed a process that, in machine-like fashion, directed commodities traders to take a clearly defined series of steps to hedge their positions, that process might lead to useful, concrete, and tangible results. Such a process would be a man-made tool for achieving a particular result, not an unpatentable law of nature. In addition, a patent for such a specific process would not broadly preempt other methods of hedging, so it would not foreclose innovators from developing superior hedging processes. Again, though, Bilski's claim is anything but a clearly defined series of steps that are stable, predictable, and reproducible—and that failure, rather than the absence of a machine or a physical transformation, is why it should not be patent-eligible.

CONCLUSION

The Court should uphold the Federal Circuit's rejection of Bilski's patent application, but should also hold that the Federal Circuit erred by concluding that the machine-or-transformation test is the definitive test for determining patent eligibility. The Court should adopt a test derived from the broad language of §101 and this Court's decisions focusing on its meaning—a test under which a process application is patent-eligible if it sets forth a defined series of steps that are stable, predictable, and reproducible and lead to results that are useful, concrete, and tangible.

Respectfully submitted.

DUANE R. VALZ
Yahoo! Inc.
701 First Avenue
Sunnyvale, CA 94089
(408) 349 3300

CHRISTOPHER J. WRIGHT *
TIMOTHY J. SIMEONE
JOSEPH C. CAVENDER
Wiltshire & Grannis LLP
Washington, D.C. 20036
(202) 730 1300

**Counsel of Record*

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